

**RESOURCE CONSERVATION AND RECOVERY ACT  
ENVIRONMENTAL INDICATOR CA725 REPORT  
DETERMINATION OF CURRENT HUMAN EXPOSURES  
UNDER CONTROL**

**DELPHI ENERGY & CHASSIS SYSTEMS  
DORT HIGHWAY FACILITY, PLANT 400  
1300 NORTH DORT HIGHWAY  
FLINT, MICHIGAN**

**EPA ID: MID 005 356 647**

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<sup>1</sup> These figures are from the RFI Field Event #2 Data Report (H&A 2003d).

## **1.0 INTRODUCTION**

### **1.1 Background**

This Resource Conservation and Recovery Act (RCRA) Environmental Indicator (EI) Report was prepared to fulfill provisions under Section 5.3.a of the Voluntary Corrective Action Agreement for the Delphi Energy & Chassis Systems Dort Highway Facility, Plant 400 located at 1300 North Dort Highway in Flint, Michigan (hereafter referred to as the "Facility"). The Facility's EPA Identification Number is MID005356647. The United States Environmental Protection Agency (USEPA) and Delphi Automotive Systems (Delphi) signed the Voluntary Corrective Action Agreement to streamline RCRA Corrective Action at the Facility. The Agreement, effective on September 20, 2002, included goals for completing the Corrective Action EI determinations for current human exposures (CA725) and migration of contaminated groundwater (CA750) by March 1 and December 31, 2004, respectively. In the Agreement, Delphi agreed to provide USEPA with draft EI determination reports at least 90 days prior to these dates.

On November 12, 2003, Delphi requested an extension of the deadline for submittal of the draft EI CA725 report from December 1, 2003 to December 15, 2003. USEPA granted Delphi's request in a letter dated November 21, 2003.

Under Section 5.2 of the Agreement, Delphi performed activities to characterize the nature and extent of releases of hazardous waste and/or hazardous constituents at the Facility. These activities included preparation of a Current Conditions Report (H&A 2002) that identified 48 areas of interest (AOIs) at the Facility, and described the physical conditions, historical operations, and any previous investigation or remedial action at each AOI. The AOIs included all the solid waste management units (SWMUs) and areas of concern (AOCs) identified in USEPA's August 2002 "Preliminary Assessment/Visual Site Inspection" report, and other areas at the Facility for which Delphi has knowledge of current or past management of hazardous waste or hazardous constituents. The Current Conditions Report evaluated each AOI and identified those where additional investigation and/or interim measures were needed. Rationale for not further investigating other AOIs was also provided in the Current Conditions Report.

Based on the information in the Current Conditions Report, Delphi identified 18 of the 48 AOIs for further investigation (two additional AOIs were also identified for investigation during the

RFI), and prepared a RCRA Facility Investigation (RFI) Work Plan (H&A 2003a) and a RFI Work Plan Addendum No. 1 (H&A 2003b) that described the objectives, approach, rationale, and procedures for these investigations. The objective of the field investigations was to collect data for determining whether a significant release of hazardous constituents had occurred at each AOI, and if so, whether the release poses unacceptable risk under current and reasonably expected future land use, or has adversely affected groundwater quality. The RFI sampling locations are shown on Figure 2, which also shows the boundaries of the AOIs investigated during the RFI.

The field investigations were conducted in accordance with the RFI Work Plan and the RFI Work Plan Addendum No.1, except where field conditions necessitated changes as discussed in the Quarterly Progress Reports provided to USEPA. The Quarterly Progress Reports also described supplemental RFI field investigation activities. The data collected during RFI Field Events #1 and #2 have been provided to USEPA and MDEQ in the Field Event #1 Data Report and Field Event #2 Data Report (H&A 2003c and 2003d).

## **1.2 Purpose**

This EI Report evaluates and discusses information that is pertinent to the RCRA corrective action CA725 determination that all current human exposures to contamination at or from the Facility are under control. This information includes the data collected during the RFI and certain data from prior investigations that were summarized in the Current Conditions Report.

The evaluation and discussion in this EI Report are organized to follow USEPA's CA725 form (Interim Final 2/5/99). A completed CA725 form that is based on the discussion in this report is provided in Appendix A. Background metal concentrations in soil that are used in the evaluation are provided in Appendix B. Vapor intrusion modeling of the indoor air pathway is discussed in Appendix C. Risk calculations for potential exposures of construction workers to LNAPL and smear zone soil containing LNAPLs are discussed in Appendix D. Figures and tables cited in the report are found at the end of the text.

## **2.0 CURRENT HUMAN EXPOSURES UNDER CONTROL**

### **2.1 Information Reviewed**

Question 1 of the CA725 form asks whether all relevant information on known and reasonably suspected releases subject to RCRA Corrective Action has been considered in making the EI determination.

All relevant information has been considered in preparing this report. Specifically, information from the following sources was reviewed to support the evaluation of whether current human exposures at the Facility are under control:

- Current Conditions Report (H&A 2002)
- RFI Work Plan (H&A 2003a)
- RFI Work Plan Addendum No.1 (H&A 2003b)
- Field Event #1 Data Report (H&A 2003c)
- Field Event #2 Data Report (H&A 2003d)
- Due Care Plan (H&A 2003e)

The reports and work plans listed above have been provided to USEPA and MDEQ. The Due Care Plan is on file at the Facility, and a copy has been submitted to USEPA.

### **2.2 Presence of Contamination**

Question 2 of the CA725 form asks whether groundwater, soil, surface water, sediment, or air is known or reasonably suspected to be "contaminated" above appropriately protective risk-based levels from releases subject to RCRA corrective action. According to the CA725 form:

"Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

In this report, the presence of "contamination" is identified based on comparison of site characterization data with the risk-based screening criteria that are discussed in the following subsections. The data used in the comparisons do not include data determined to be not usable

during data validation (i.e., R-qualified data). Concentrations qualified as estimated (e.g., J-qualified data) are included, and concentrations from duplicate pairs have been averaged to obtain a representative concentration for each duplicate pair. The analytical data for all samples (including those for constituents not detected, R-qualified data, and data for individual samples in duplicate pairs) are provided in the Field Event #1 and #2 Data Reports.

### **2.2.1 Soil**

The soil characterization data for each AOI are summarized on Tables 2-1a and 2-1b. The data on these tables include both data that were collected during the RFI and pertinent pre-RFI data that were presented in the Current Conditions Report. For each AOI, Tables 2-1a and 2-1b show the detected constituents, their detection frequencies, their ranges of detected concentrations, and the ratios of the highest measured concentrations to the screening criteria. The screening criteria for soil include the Part 201 generic cleanup criteria that MDEQ has developed under the authority of the Natural Resources and Environmental Protection Act (1994 PA 451, as amended). The specific Part 201 criteria used here for identifying on-site soil contamination are those based on direct contact and inhalation of soil vapor (infinite source) and particulates in ambient air for industrial land use (MDEQ 2002). In addition, on-site soil contamination is identified using site-specific soil volatilization to indoor air criteria that are based on site-specific soil conditions and appropriate inhalation criteria. Derivation of the site-specific volatilization to indoor air criteria is discussed in Appendix C. The specific Part 201 criteria used for identifying off-site soil contamination are the residential criteria based on direct contact, inhalation of soil vapor (infinite source) and particulates in ambient air, and soil volatilization to indoor air.

Soil contamination at an area is identified in Tables 2-1a and 2-1b by comparing the highest site-related concentration of each chemical in surface and subsurface soil at the area to the screening criteria. For metals, site-related concentrations are those that are higher than the site-specific background levels included in Tables 2-1a and 2-1b, which are further discussed in Appendix B. For other chemicals, all concentrations are conservatively assumed to be site-related. Ratios of the highest site-related concentrations at an area to the screening criteria are shown in Tables 2-1a and 2-1b. Ratios higher than 1 are considered to meet the definition of “contamination” and are highlighted. As shown in Table 2-1a, the ratios for certain constituents exceed 1 at the following AOIs:

AOI 26 - Container Storage Area

AOI 45 - Compactor

AOI 50 - Crane Bay

None of the other areas (including off-site areas) have constituents with concentrations that are higher than any of the screening criteria discussed above. The locations and depth intervals at which concentrations in soil are considered to meet the definition of “contamination” are shown on Figures 6A, 8A, and 9A of the Field Event #2 Data Report, and are summarized in Table 2-1c.

No constituent in either on-site or off-site soil has a concentration that is higher than the site-specific soil volatilization to indoor air criteria discussed above. Additionally, if constituents in on-site soil were assumed to volatilize and migrate through building foundations into indoor air, their contribution to indoor air mixtures that include chemicals from occupational sources would be insignificant. This additional evaluation, which is consistent with Occupational Safety and Health Administration (OSHA) regulations on evaluation of chemical mixtures in air, is summarized in Appendix C.

In addition to the soil characterization data summarized in Tables 2-1a through Table 2-1c, chemical characterization data for LNAPLs were collected during the RFI at the following AOIs:

- AOI 13 - Gridley Area
- AOI 22 - Chip Collection Area
- AOI 50 - Crane Bay

The locations of the monitoring wells where LNAPL samples were collected and their analytical results are discussed in the Field Event #1 and #2 Data Reports (H&A 2003c, 2003d). The extent of these LNAPLs is show on Figures 3A, 5A, and 9A of the Field Event #2 Data Report (H&A 2003d).

Table 2-2 provides a summary of the chemical characterization data for the LNAPL at each of the AOIs listed above. Although soil sampling conducted during the RFI did not specifically target the depth interval in which the LNAPL layer fluctuates with the water table (the smear zone), a theoretical upper-bound on the concentration of a LNAPL constituent in the smear zone soil ( $C_{soil}$ ) can be estimated as follows:

$$C_{soil} = C_{LNAPL} \cdot \rho_{LNAPL} \cdot \frac{n}{\rho_{soil}}$$

where  $C_{LNAPL}$  is the concentration of a chemical in the LNAPL,  $\rho_{LNAPL}$  is the density of the LNAPLs (approximately 0.9 kg/L),  $n$  is the total porosity of the soil (0.38), and  $\rho_{soil}$  is the dry bulk density of the soil (1.65 kg/L). The soil porosity and bulk density are based on site-specific

geotechnical data for sand, and are considered representative of the predominant soil type at the smear zone. This calculation assumes 100% LNAPL saturation of the soil voids and is highly conservative since typical LNAPL residual saturation does not exceed 20% to 50%, depending on the type of LNAPL and soil.

The upper-bound smear zone soil concentrations estimated using the highest concentrations detected in the LNAPL at each AOI are shown in Table 2-2, and are compared with the soil screening criteria discussed above. As shown in Table 2-2, no constituents have upper-bound smear zone soil concentrations that are higher than the screening criteria. Therefore, the smear zone soil is not considered to meet the definition of “contamination” at any AOI.

The potential for human exposure to the constituents in soil with concentrations higher than the screening criteria is discussed in Section 2.3 and the significance of any potential exposure is discussed in Section 2.4. Section 2.4 also includes discussion of potential exposure of construction workers to subsurface LNAPLs that the soil screening criteria do not address (e.g., dermal contact with and inhalation of vapor from LNAPL).

## **2.2.2 Groundwater**

Groundwater quality data from on-site and off-site monitoring wells are summarized on Tables 2-3a and 2-3b, respectively. Where appropriate based on the locations of the monitoring wells, the groundwater data on these tables are grouped and summarized by AOI. Data from “site-wide” groundwater that are not specifically associated with a particular AOI are summarized as AOI-48. The locations of these wells are shown on Figure 2. The data on Tables 2-3a and 2-3b are also grouped by the saturated zones from which the data were collected, where “Zone 1” refers to the shallow saturated zone and “Zone 2” refers to the deeper saturated zone.

Tables 2-3a and 2-3b show the detected constituents, their detection frequencies and range of detected concentrations among the on-site and off-site monitoring wells, respectively, and the ratios of the highest measured concentrations to the screening criteria. The screening criteria for groundwater are the Part 201 generic cleanup criteria that the MDEQ has developed under the authority of the Natural Resources and Environmental Protection Act (1994 PA 451, as amended). The specific Part 201 criteria used here for identifying groundwater contamination are the generic groundwater contact criteria and the generic industrial and residential drinking water criteria (MDEQ 2002). It should be noted that there are no known active drinking water or industrial production wells at or near the Facility; potable water is supplied by the City of Flint, as described in the Field Event #2 Data Report. In addition to the criteria listed above, on-site and off-site groundwater data are also evaluated using site-specific volatilization to indoor air criteria that are based on site-specific soil conditions and appropriate occupational and residential

inhalation criteria, respectively. Derivation of these site-specific criteria is discussed in Appendix C, and the criteria are included on Tables 2-3a and 2-3b.

Groundwater contamination, if present, is identified on Tables 2-3a and 2-3b by comparing the highest concentration of each chemical in groundwater to the screening criterion. The ratios of the highest concentrations to the screening criteria are shown on Tables 2-3a and 2-3b. Ratios higher than 1 are considered to meet the definition of “contamination” and are highlighted. The locations at which concentrations in on-site groundwater are considered to meet the definition of “contamination” are shown on Figures 1A through 11A of the Field Event #2 Data Report, and are summarized on Table 2-3c. The locations at which concentration in off-site groundwater are considered to meet the definition of “contamination” are summarized on Table 2-3d.

As shown on Tables 2-3a through 2-3d, constituents with concentrations in shallow groundwater (Zone 1) that are higher than the groundwater contact criteria are limited to certain polycyclic aromatic hydrocarbons (PAHs) at AOI 11, carbon tetrachloride at AOI 48(SE), and vinyl chloride at AOI 50. The only other constituent with groundwater concentrations that are higher than the groundwater contact criteria is trichloroethene (TCE) in deep groundwater (Zone 2) at MW-4626M in AOI 48(NW). No constituents have concentrations in on-site or off-site groundwater monitoring wells that are higher than the site-specific vapor intrusion criteria. Additionally, if constituents in on-site groundwater were assumed to volatilize and migrate through building foundations into indoor air at the Facility, their contribution to indoor air mixtures that include chemicals from occupational sources would be insignificant. This additional evaluation is summarized in Appendix C.

Borehole water samples were collected from open boreholes during pre-RFI and RFI field investigations to support placement of groundwater monitoring wells and identification of potential vadose zone sources of groundwater contaminants. Although the procedures for collecting borehole water samples were intended to minimize the potential for introducing contaminants (including soil particles) into the sample by the sampling procedure, such influence could not be entirely eliminated because of the nature of the sample collection method. As such, the borehole water data do not necessarily represent groundwater quality in the saturated zone, so that comparison of these data to the groundwater screening criteria used for evaluating groundwater data is not appropriate. However, groundwater quality in the vicinity of all borehole water sample locations was characterized during the RFI. Accordingly, the borehole water data are not used for identifying the presence of groundwater “contamination” for the purposes of the CA725 determination, although they are included in the Field Event #1 and Field Event #2 Data Reports.

A dense nonaqueous-phase liquid (DNAPL) sample was collected at AOI 48(NW) from monitoring well MW-4626M, which is screened from approximately 15 to 25 feet below ground surface. The only constituent detected in the DNAPL was TCE (at 520,000 mg/kg).

### **2.3 Exposure Pathways**

Question 3 of the CA725 form asks whether there are complete exposure pathways between the "contamination" identified under Question 2 and human receptors such that exposures can be reasonably expected under current conditions. The potential for exposure to the contamination identified in Section 2.2 under current conditions at the Facility is discussed below.

#### Soil

Contaminated soil identified at AOIs 26, 45 and 50 is covered by building floors, heavy machinery or pavement, which prevents current exposure of workers engaged in routine activities or exposure of trespassers. However, potential exposure of workers engaged in subsurface construction activities at AOIs 26, 45, and 50 is possible.

#### LNAPL

Potential exposure of workers via direct contact with LNAPL during subsurface construction activities is possible at AOIs 13, 22, and 50. In addition, routine workers could be exposed to constituents in LNAPLs at these AOIs which are beneath on-site buildings if the constituents volatilize and migrate through cracks in building foundations into indoor air.

#### Groundwater

As discussed in the Field Event #2 Data Report, existing information indicates that the Facility and the surrounding area obtain potable water from the City of Flint and do not rely on the local groundwater as a drinking water or industrial water supply. Delphi has conducted a records search of registered wells in the area and has found no active drinking water or industrial production wells at or near the Facility. As Delphi continues its survey of groundwater uses downgradient of the Facility, the potential for exposure to groundwater via potable or nonpotable uses will be reevaluated. Currently, the only potential for exposure to constituents in groundwater is during subsurface construction activities that extend into the shallow groundwater (Zone 1). Typical excavations in this area are expected to extend up to approximately 10 feet below ground, based on the depth of existing utilities. The only shallow groundwater locations with concentrations higher than the groundwater contact criteria are at AOIs 11, 48(SE), and 50.

## DNAPL

Potential exposure to the DNAPL found at monitoring well MW-4626M is not expected because the DNAPL was found at approximately 15 to 25 feet below ground surface, which is deeper than expected excavation depths. Potential exposure to constituents in the DNAPL is also not expected because the DNAPL is located under approximately 1 to 3 feet of groundwater (which has been monitored at MW-4626S) and 4 feet of clay.

There is no other complete exposure pathway between “contaminated” soil, groundwater, or LNAPLs and human receptors at the Facility that can be reasonably expected under current conditions. The potential significance of exposures via these complete pathways is discussed in Section 2.4.

### **2.4 Significance of Potential Exposures**

Question 4 of the CA725 form asks whether exposure from the complete exposure pathways identified under Question 3 can be reasonably expected to be "significant" or unacceptable. The significance of potential exposures identified in Section 2.3 is discussed below.

#### **2.4.1 Soil**

The significance of potential exposures to soil contamination under current conditions can be evaluated by estimating the cumulative cancer and noncancer risks associated with the potential exposures and comparing them with the USEPA-established levels for determining whether corrective measures are warranted under RCRA corrective action. Under USEPA policy, corrective measures are not warranted when the site-related cumulative cancer risk does not exceed  $10^{-4}$  and the noncancer hazard index (HI) does not exceed 1 (61 FR 19432, May 1, 1996; USEPA 1991b).

Conservative estimates of high-end cumulative cancer and noncancer risks for potential exposure of workers to soil at AOIs 26, 45, and 50 are shown on Table 2-4. Estimates for the other areas, which do not have soil that meets the definition of contamination, are also shown on Table 2-4. These estimates are calculated based on the maximum concentrations of constituents detected in soil at each area, and the conservative exposure factors that were used to derive the USEPA Region 9 risk-based PRGs for soil in generic commercial/industrial settings. High-end cumulative cancer and noncancer risk estimates for an area would be lower if concentrations representative of the area were used instead of maximum concentrations, and if site-specific exposure factors were used to account for the magnitude, frequency, and duration of exposures appropriate for the particular area, as would be done in risk assessments following USEPA guidance (1989).

The exposure factors that were used to derive the risk-based PRGs are the standard default values that EPA recommends for evaluating reasonable maximum exposures (RME) to soil in commercial/industrial settings, except a soil ingestion rate of 100 mg/day was used instead of the standard default value of 50 mg/day (USEPA 2002). Therefore, these screening criteria are more conservative than necessary for evaluating potential exposures of workers to soil during routine activities. The risk estimates based on these exposure factors are also conservative for evaluating potential exposure of other receptors that have lower potential exposures to soil than routine workers, such as construction/maintenance workers and trespassers (ENVIRON 2003).

As summarized on Table 2-4, these conservative high-end estimates of cumulative cancer risk and HI do not exceed  $10^{-4}$  and 1, respectively, at any area. This means that there are no unacceptable current exposures at these areas.

#### **2.4.2 LNAPL**

As noted in Section 2.3, potential exposure of workers via direct contact with LNAPLs during subsurface construction activities is possible at AOIs 13, 22, and 50. The significance of potential exposure of workers to constituents in the LNAPLs via dermal contact and inhalation of vapors from exposed LNAPL during excavation associated with occasional maintenance or construction activities is evaluated in Appendix D.

The cumulative cancer risk and HI for potential exposure to LNAPL constituents at AOIs 13, 22, and 50 are summarized in Table 2-5. These estimates are calculated using the highest concentration of each constituent detected in LNAPL at each AOI. This summary shows that potential exposure of workers conducting excavations during occasional maintenance or construction activities is not expected to result in significant cancer or noncancer risks at these AOIs. These risk estimates assume that workers who are potentially exposed to the LNAPL do not wear any personal protective equipment (PPE) during excavations. However, no construction is actually being conducted or is currently planned at these areas in the near future. Also, Delphi has institutional controls in place to ensure that any planned construction activity in the LNAPL areas would follow proper health and safety procedures to prevent an unacceptable exposure.

As discussed in Section 2.3, routine workers could be exposed to constituents in the subsurface LNAPLs via volatilization and assumed migration through building foundations into indoor air. This exposure pathway is evaluated by comparing the estimated indoor air concentrations from LNAPL in each AOI where LNAPL is beneath a building with appropriate occupational inhalation limits that are discussed in Appendix C. The indoor air concentrations used in the comparison are calculated using Raoult's law and site-specific attenuation factors that are

discussed in Appendix C. As shown in Appendix C, none of the estimated indoor air concentrations at these locations exceed the occupational inhalation limits. The calculations in Appendix C also show that if constituents in the LNAPLs were assumed to volatilize and migrate through building foundations into indoor air, their contribution to indoor air mixtures that include chemicals from occupational sources would be insignificant.

### **2.4.3 Groundwater**

The only potential for exposure to groundwater that meets the definition of “contamination” is during subsurface construction activities that extend into the water table, as discussed in Section 2.3. Therefore, the only groundwater screening criteria that are pertinent for evaluating the significance of current potential exposures to contaminated groundwater at the Facility are the groundwater contact criteria discussed in Section 2.2.2.

As shown on Table 2-3c, concentrations in shallow groundwater (Zone 1) are higher than the groundwater contact criteria at AOIs 11, 48(SE), and 50. Groundwater at these AOIs is approximately 5 to 9 feet below ground surface and is within reasonably expected excavation depths. The significance of potential current exposure to concentrations in shallow groundwater that are higher than the groundwater contact criteria at these AOIs is discussed below.

#### AOI 11 (Executive Garage)

The two groundwater samples that were collected from monitoring well MW-4005 during the RFI have several PAHs with concentrations that are higher than the groundwater direct contact criteria, as shown on Table 2-3c. However, most of these concentrations are also more than 10 times higher than the limits of solubility. This means that the concentrations of PAHs in these samples are not dissolved-phase concentrations, and comparing them with the groundwater contact criteria is inappropriate because the criteria were derived for evaluating contact with dissolved-phase concentrations. The concentrations of PAHs found in these groundwater samples are likely to be associated with solid-phase materials in the samples. This is at least partially supported by the high turbidity observed in the samples during sample collection, as noted in the Field Event #2 Data Report. For most of these PAHs, the solubility limit is lower than the groundwater contact criteria (MDEQ 2002), which means that it is highly unlikely that the dissolved-phase concentrations of these PAHs are higher than the groundwater contact criteria. Therefore, the PAHs in groundwater at MW-4005 do not pose a significant risk to workers who might contact groundwater during occasional excavations.

#### AOI 48 SE (Site-wide Groundwater Investigation South-East Corner)

The RFI groundwater samples collected from monitoring wells MW-4642S and MW-4643S have concentrations of carbon tetrachloride that are higher than the groundwater contact criterion. As shown on Figure 11A in the Field Event #2 Data Report, the downgradient extent of these concentrations is partially bounded by a monitoring well to the east/southeast. Delphi has established institutional controls to ensure that any planned construction activity in this area follows proper health and safety procedures to prevent significant exposures.

#### AOI 50 (Crane Bay)

The RFI groundwater sample collected from monitoring well MW-4634S has a concentration of vinyl chloride that is higher than the groundwater contact criterion. As shown on Figures 5A, 9A and 10A, the downgradient extent of this concentration is bounded by monitoring wells to the north. Delphi has established institutional controls to ensure that any planned construction activity in this area follows proper health and safety procedures to prevent significant exposures.

### **2.5 Conclusion**

The presence of “contamination” is identified based on comparison of site characterization data for soil, groundwater, and estimated smear zone soil concentrations (based on LNAPL concentrations) with generic risk-based screening criteria. Soil and groundwater at certain AOIs at the Facility are considered to meet the definition of “contamination” when the highest constituent concentrations at an AOI are compared with generic risk-based screening criteria. LNAPL is present at the water table at AOIs 13, 22, and 50. DNAPL has been found at one monitoring well in a deeper part of the saturated zone near the northwestern boundary the Facility. The potential for current exposure to “contaminated” media is limited to potential exposure of workers to constituents in soil, shallow groundwater, and LNAPL during occasional subsurface construction activities, and to routine workers who could be exposed to constituents in the subsurface LNAPLs via volatilization and assumed migration through building foundations into indoor air. When the magnitude of potential exposures, current site-specific conditions, and institutional controls are considered, the concentrations of constituents in these media do not present a significant exposure. Therefore, the data collected at the Facility support a determination that all current human exposures to “contamination” at or from the Facility are under control.

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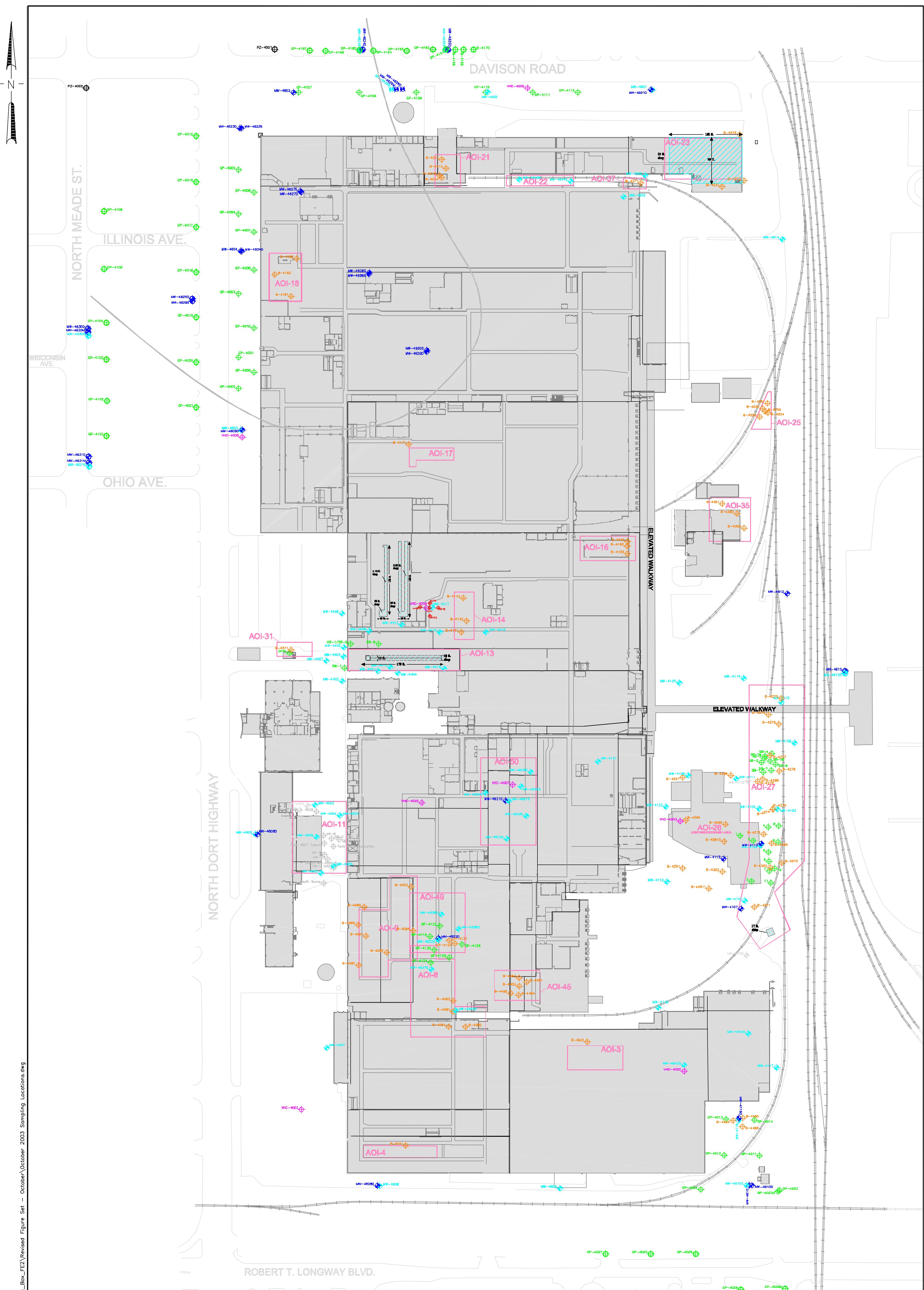
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## F I G U R E S



G:\49017\027 - FE2 Data Interpretation\Data\_Box\_FEA\Revised Figure Set - October\October 2003 Sampling Locations.dwg

**LEGEND:**

- Monitoring Well Screened in Zone 1
- Monitoring Well Screened in Zone 2
- Approximate Location of AOI Boring Location
- Abandoned Monitoring Well
- Approximate Location of Geoprobe Delination of Samples
- Pre RFI Sample Location
- Piezometer
- Geotechnical Samples - Shelby Tubes
- Hand Augered Locations

- Off-Site Sample Location
- AOI's Investigated during RFI.
- Above Grade Structure
- Basements, Trenches, or Pits
- Approximate extent of underlying clay rich layer beneath Zone 1.

**NOTES:**

1. Base Plan provided by Delphi Corporation.
2. Locations of Monitoring Wells are based on survey data, other locations are approximate.
3. The first (shallow) saturated zone beneath the facility (depth to groundwater of 4 - 16 ft) is called "Zone 1", except in the northwest corner of the property, where "Zone 1" is absent as shown by extent of clay designation.
4. In the northwest corner of the property, there is only one water-bearing zone identified, and water levels in the area are consistent with "Zone 2" (see below). For risk screening purposes (Appendix C), the upper half of the first saturated zone encountered is identified as "Zone1/Zone2," and the lower half is identified as "Zone 2." These "Zone1/Zone2" monitoring wells are identified as "Zone 2" on this figure.
5. The second (deeper) saturated zone beneath the facility (depth to groundwater of 15 - 25 ft) is called "Zone 2."

0 100 200 300  
SCALE IN FEET



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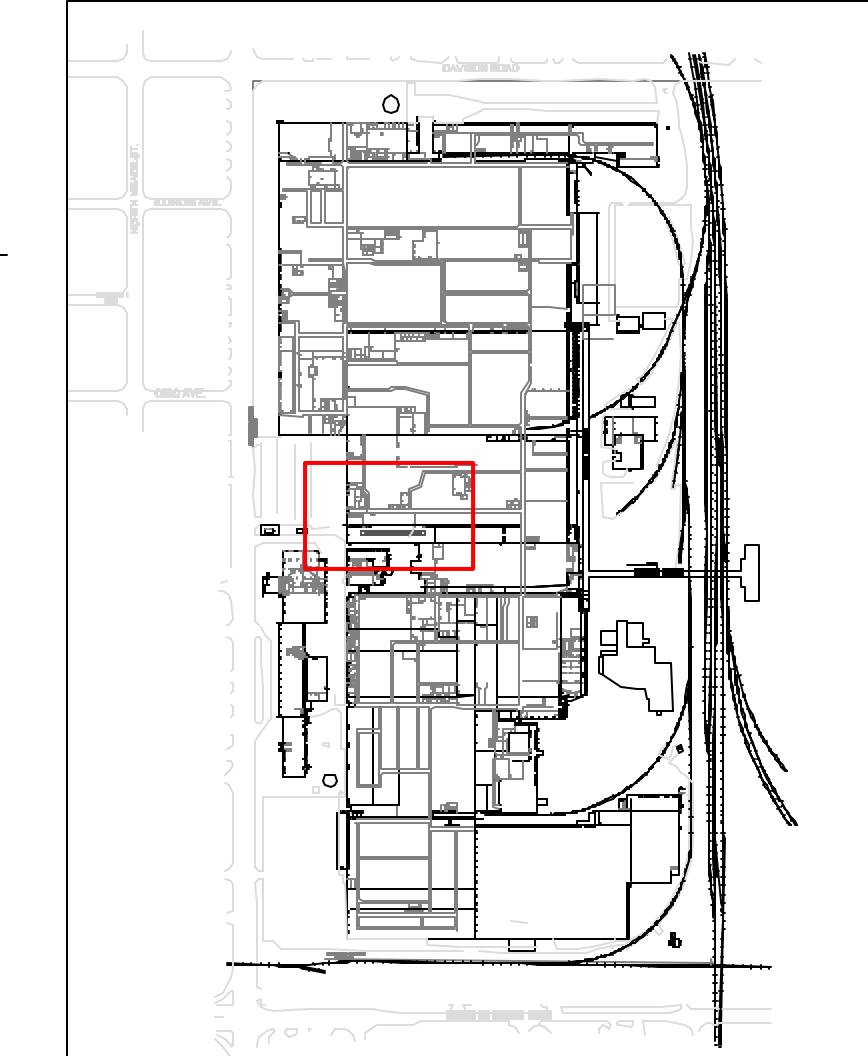
DELPHI CORPORATION  
FLINT-EAST, PLANT 400  
DORT HIGHWAY  
FLINT, MICHIGAN

SITE PLAN AND  
SAMPLING LOCATIONS

SCALE: AS SHOWN

NOVEMBER 2003

FIGURE 2



SCREENING CRITERIA FOR SOIL					
Constituent	Background (mg/kg)	Industrial Direct Contact (mg/kg)	Industrial Volatilization to Indoor Air (mg/kg)	Volatilization to Ambient Air Infinite Source (mg/kg)	Industrial Particulate Inhalation (mg/kg)
Arsenic	6.79	37	-	-	910
Lead	57.7	900	-	-	44,000
Benzene	-	8	-	-	1,900
1,1-Dichloroethene	-	570	700	3.7	76,000

Note: 1. See Appendix C for Residential (Off-Site) Screening Criteria.

SCREENING CRITERIA FOR GROUNDWATER						
Constituent	Residential Drinking Water <sup>(1)</sup> (mg/L)	Industrial Drinking Water <sup>(2)</sup> (mg/L)	Direct Contact <sup>(3)</sup> (mg/L)	Residential Volatilization to Indoor Air <sup>(4)</sup> (mg/L)	Industrial Volatilization to Indoor Air <sup>(5)</sup> (mg/L)	Groundwater Surface Water Interface <sup>(6)</sup> (mg/L)
Aluminum	0.3	4.1	64,000	-	-	-
Antimony	0.006	0.006	68	-	-	0.13
Arsenic	0.05	0.05	4.3	-	-	0.15
Boron	2	-	4,000	-	-	1
Cadmium	0.005	0.005	120	-	-	0.13
Chromium (total)	0.1	0.1	480	-	-	0.11
Chromium VI	0.04	0.1	2,400	-	-	0.11
Iron	2	5.6	68,000	-	-	-
Lead	0.004	0.004	-	-	-	0.19
Manganese	0.66	2.6	9,100	-	-	69
Molybdenum	0.002	0.002	0.056	0.398	45.8	0.0000013
Nickel	0.1	0.1	74,000	-	-	210
Sodium	20	55	1,000,000	-	-	-
Thallium	0.002	0.002	0.002	-	-	0.0037
Tin	0.0045	0.002	870	-	-	0.012
Uranium	0.005	0.005	11	3.37	4,340	0.2
Zinc	0.005	0.005	4.8	0.708	8,220	0.045
benzene	0.005	0.005	0.32	179,000	156,000,000	0.032
Carbon Tetrachloride	0.005	0.005	4.8	0.708	16,700	0.17
Chloroform	0.1	0.1	150	1.52	16,700	0.17
1,1,2,2-Tetrachloroethane	0.005	0.005	18	4.04	18,400	0.36
1,1-Dichloroethene	0.58	2.6	2,400	56	545,000	0.4
1,1,2-Trichloroethane	0.007	0.007	1	66.9	1,580,000	0.65
cis-1,2-Dichloroethene	0.007	0.007	200	45.6	1,280,000	0.62
trans-1,2-Dichloroethene	0.1	0.1	220	53.4	768,000	1.52
Ethylbenzene	0.7	0.7	170	987	528,000	0.018
Methylene Chloride	0.005	0.005	220	109	208,000	0.94
Toluene	1	1	630	417	488,000	0.14
1,1,1-Trichloroethane	0.2	0.2	1,300	1,310	1,580,000	0.2
Trichloroethene	0.005	0.005	22	10.8	276,000	0.2
Vinyl Chloride	0.02	0.002	1	1.01	1,310	0.015
Xylyne (total)	10	10	190	104	568,000	0.038
Acetone	0.005	0.005	200	67	-	-
Benzene	0.002	0.002	0.002	4.13	-	-
Benzol(a,h)fluoranthene	0.005	0.005	0.005	468,000	-	-
Benzol(a,h)pyrene	0.005	0.005	0.005	4,960	-	-
Benzol(k)fluoranthene	0.005	0.005	0.005	474	-	-
Chrysene	0.005	0.005	0.005	-	-	-
Dibenz(a,h)anthracene	0.002	0.002	0.002	499	-	-
Indeno(1,2,3-j)pyrene	0.002	0.002	0.002	257	-	-
Perchloroethene	0.001	0.001	24,800	61,200,000	0.0028	-

(1) Screening criteria used for comparison for off-site locations.

(2) Screening criteria used for comparison for on-site locations.

2. Soil analytical results (orange box) are reported in mg/kg.

Groundwater analytical results (blue box) are reported in mg/L.

3. ND - Indicates compound was analyzed for but not detected.

J - Indicates estimate value.

ND (J) - Indicates estimated Reporting Limit.

D - Used in Pre-RFI data, indicates the analysis was a dilution.

NS - Indicates the compound was not analyzed.

NA - Not Available, associated with Pre-RFI data.

BC - Below Criteria or Not Detected

/ - Indicates duplicate sample pairs.

FPT - Free Product Thickness, FP ND - Free Product Not Detected

4. Soil screening criteria codes are shown in ( ).

A - Exceeds Industrial Direct Contact Screening Criteria

D - Exceeds Industrial Volatilization to Ambient Air Screening Criteria

5. Groundwater screening criteria codes are shown in ( ).

A - Exceeds Industrial Drinking Water Screening Criteria

AB - Exceeds Industrial Drinking Water and GW Contact Screening Criteria

G - Exceeds Groundwater/Surface Water Interface (GSI) Screening Criteria

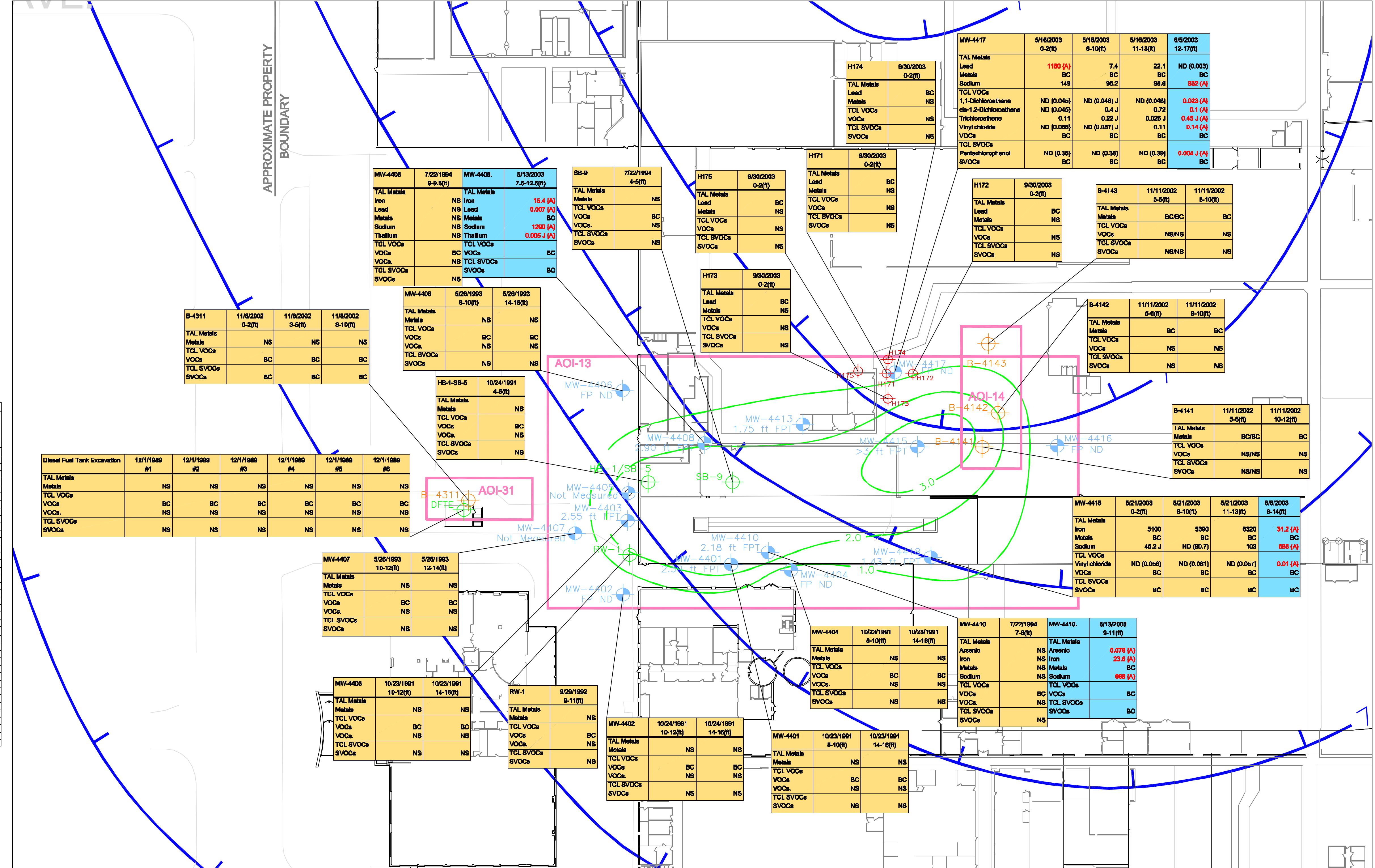
AG - Exceeds Industrial Drinking Water and GSI Screening Criteria

D - Exceeds Residential Drinking Water Screening Criteria

DP - Exceeds Residential Drinking Water and Residential Volatilization to Indoor Air Screening Criteria

6. All the off-site locations sampled to date are located on commercial or industrial properties. However, data from off-site locations are conservatively compared with residential screening criteria listed in Appendix C.

7. Inferred groundwater flow is based on site-wide potentiometric surface contours for Zone 1 as shown in Figure 9. Also see Figure 9 for Zone 2 contours.



#### LEGEND:

- Monitoring Well Screened in First Saturated Zone
- Monitoring Well Screened in Second Saturated Zone
- Approximate Location of AOI Boring Location
- Abandoned Monitoring Well
- Approximate Location of Geoprobe Delineation of Samples
- Pre RFI Sample Location
- Estimated extent of clay aquitard

○ Hand Augered Locations

○ Free Product Thickness Isocontours based on July 2003 Product Level Measurements

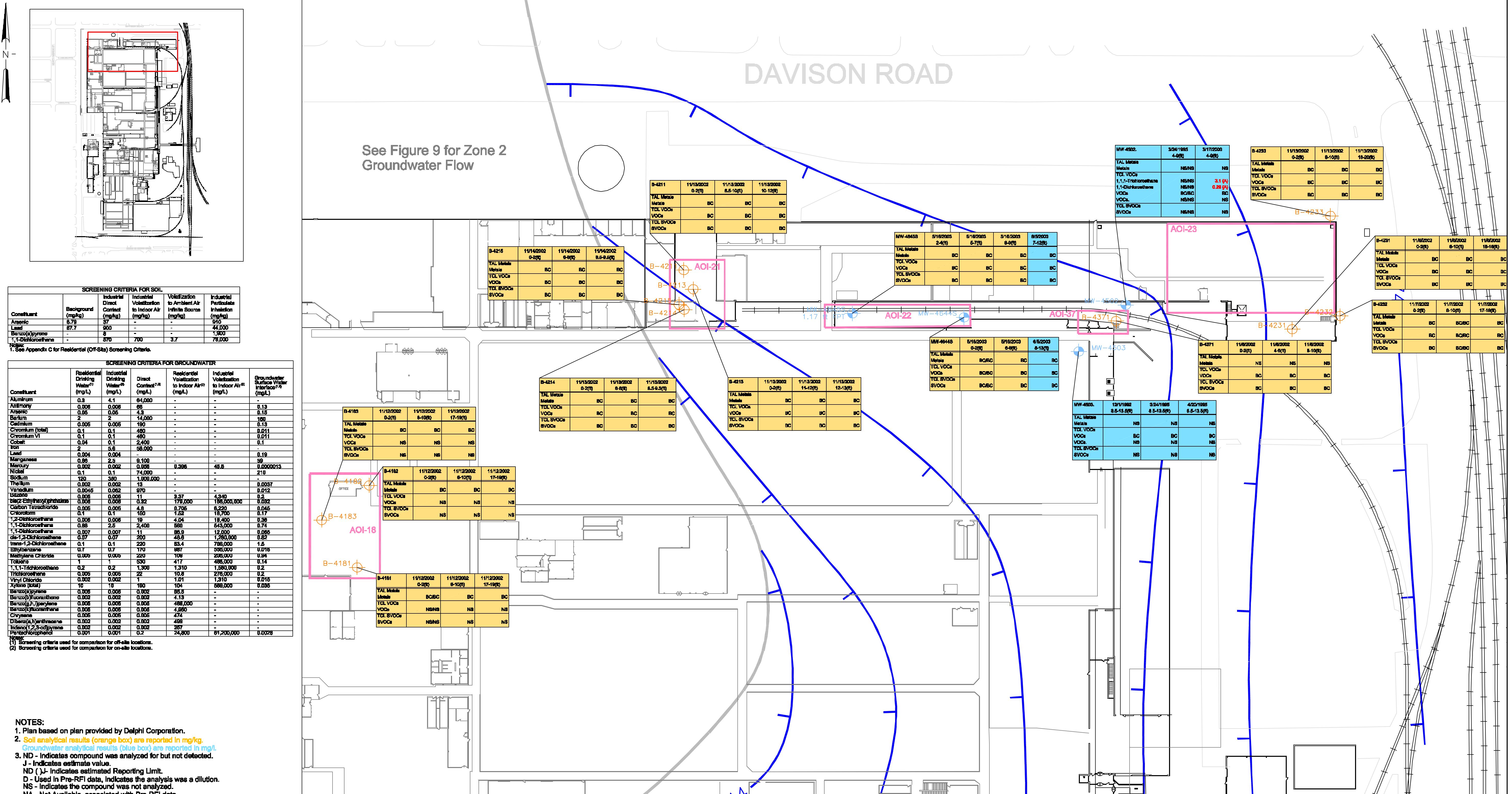
0 40 80 120  
SCALE IN FEET



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ENVIRONMENTAL  
SOLUTIONS

SCREENING RESULTS FOR  
AOI-13 GRIDLEY AREA, AOI-14 PHOSPHATER  
AND AOI-31 FORMER DIESEL UST (#4052)  
SCALE: AS SHOWN

**LEGEND:**

- Monitoring Well Screened in First Saturated Zone
- Monitoring Well Screened in Second Saturated Zone
- Approximate Location of AOI Boring Location
- Abandoned Monitoring Well
- Approximate Location of Geoprobe Delineation of Samples
- Pre RFI Sample Location
- Estimated potentiometric Zone 1 surface contours (July 2003) and inferred flow direction (see Figure 9 for Zone 2)
- Estimated extent of clay aquicard

0 50 100 150  
SCALE IN FEET

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DELPHI CORPORATION  
FLINT EAST, PLANT 400  
DORT HIGHWAY  
FLINT, MICHIGAN  
  
SCREENING RESULTS FOR AOI-18 FORMER  
ZINC DICROMATE PLATING LINES, AOI-21  
USED OIL UST TANKS #4024 & #4025, AOI-22  
CHIP COLLECTION AREA, AOI-23 AUTOMATIC  
SCREW MACHINE BASEMENT, AND AOI-37  
FORMER USED VISCOR UST  
  
SCALE: AS SHOWN

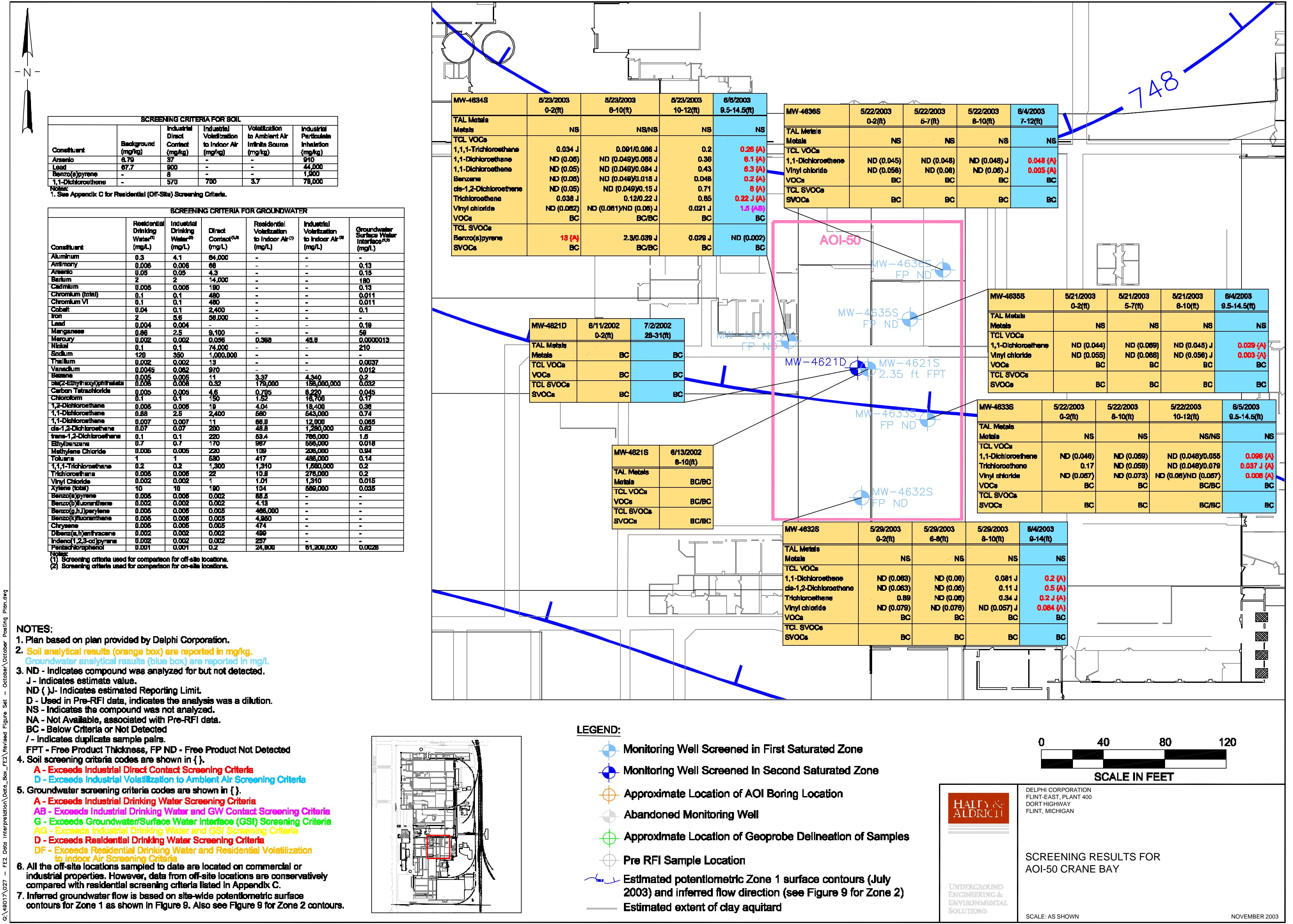


FIGURE 9A

**T A B L E S**

**Table 2-1a: Soil Screening Results for On-Site Borings**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Industrial Soil Volatilization to Ambient Air Criteria (mg/kg)	Industrial Particulate Inhalation Criteria (mg/kg)	Industrial Direct Contact Criteria (mg/kg)	Site Specific Industrial Volatilization to Indoor Air Criteria (mg/kg)	Site Specific Background (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Ambient Air Criteria	Ratio of Max Conc to Industrial Particulate Inhalation Criteria	Ratio of Max Conc to Industrial Direct Contact Criteria	Ratio of Max Conc to Site Specific Industrial Volatilization to Indoor Air Criteria	
AOI-03	INORG	Aluminum	7429-90-5	D	3	3	2.21E+03	7.42E+03			3.7E+05			7.4E+03			8.1E-05			
AOI-03	INORG	Arsenic	7440-38-2	A	3	3	4.50E+00	7.20E+00			9.1E+02	3.7E+01		6.8E+00			4.4E-04	1.1E-02		
AOI-03	INORG	Barium	7440-39-3	D	3	3	1.16E+01	4.62E+01			1.5E+05	1.3E+05		6.2E+01						
AOI-03	INORG	Beryllium	7440-41-7	B1	3	3	9.90E-02	4.20E-01			5.9E+02	1.6E+03		3.1E-01			1.8E-04	6.6E-05		
AOI-03	INORG	Cadmium	7440-43-9	B1	3	2	4.40E-02	1.50E-01	1.80E-02	1.80E-02	2.2E+03	2.1E+03		1.4E+00						
AOI-03	INORG	Calcium	7440-70-2		3	3	2.02E+04	5.64E+04												
AOI-03	INORG	Chromium (total)	7440-47-3		3	3	5.00E+00	1.23E+01			2.4E+02	9.2E+03		1.8E+01						
AOI-03	INORG	Cobalt	7440-48-4	B1	3	3	2.40E+00	6.10E+00			5.9E+03	9.0E+03		5.8E+00			4.7E-05	3.1E-05		
AOI-03	INORG	Copper	7440-50-8	D	3	3	1.07E+01	1.31E+01			5.9E+04	7.3E+04		5.9E+01						
AOI-03	INORG	Iron	7439-89-6	D	3	3	6.06E+03	1.67E+04				5.8E+05		1.5E+04				2.1E-03		
AOI-03	INORG	Lead	7439-92-1	B2	3	3	5.70E+00	7.10E+00			4.4E+04	9.0E+02		6.8E+01						
AOI-03	INORG	Magnesium	7439-95-4		3	3	5.71E+03	1.75E+04			2.9E+06	1.0E+06					6.0E-03	1.8E-02		
AOI-03	INORG	Manganese	7439-96-5	D	3	3	1.52E+02	3.09E+02			1.5E+03	9.0E+04		5.2E+02						
AOI-03	INORG	Mercury	7439-97-6	D	3	2	2.10E-02	4.30E-02	1.80E-02	1.80E-02	6.2E+01	8.8E+03	5.8E+02	1.3E+04	1.9E-01					
AOI-03	INORG	Nickel	7440-02-0	A	3	3	5.80E+00	1.49E+01			1.6E+04	1.5E+05		1.5E+01						
AOI-03	INORG	Potassium	7440-09-7		3	3	2.80E+02	1.08E+03												
AOI-03	INORG	Selenium	7782-49-2	D	3	1	4.00E-01	4.00E-01	3.50E-01	3.50E-01	5.9E+04	9.6E+03		7.0E-01						
AOI-03	INORG	Sodium	7440-23-5		3	3	7.89E+01	2.29E+02				1.0E+06						2.3E-04		
AOI-03	INORG	Vanadium	7440-62-2		3	3	9.00E+00	2.10E+01				5.5E+03		1.8E+01				4.9E-04		
AOI-03	INORG	Zinc	7440-66-6	D	3	3	4.06E+01	1.34E+02				6.3E+05		9.0E+01				7.0E-05		
AOI-04	INORG	Aluminum	7429-90-5	D	3	3	6.80E+03	1.05E+04				3.7E+05		7.4E+03				8.4E-03		
AOI-04	INORG	Antimony	7440-36-0		3	1	3.00E-01	3.00E-01	2.60E-01	2.60E-01	5.9E+03	6.7E+02		8.0E-01						
AOI-04	INORG	Arsenic	7440-38-2	A	3	3	7.30E+00	1.05E+01			9.1E+02	3.7E+01		6.8E+00			4.1E-03	1.0E-01		
AOI-04	INORG	Barium	7440-39-3	D	3	3	4.62E+01	7.89E+01			1.5E+05	1.3E+05		6.2E+01			1.1E-04	1.3E-04		
AOI-04	INORG	Beryllium	7440-41-7	B1	3	3	2.20E-01	4.60E-01			5.9E+02	1.6E+03		3.1E-01			2.5E-04	9.1E-05		
AOI-04	INORG	Cadmium	7440-43-9	B1	3	3	2.60E-01	3.10E-01			2.2E+03	2.1E+03		1.4E+00						
AOI-04	INORG	Calcium	7440-70-2		3	3	2.10E+03	5.20E+04												
AOI-04	INORG	Chromium (total)	7440-47-3		3	3	1.17E+01	1.78E+01			2.4E+02	9.2E+03		1.8E+01						
AOI-04	INORG	Cobalt	7440-48-4	B1	3	3	6.20E+00	1.29E+01			5.9E+03	9.0E+03		5.8E+00			1.2E-03	7.9E-04		
AOI-04	INORG	Copper	7440-50-8	D	3	3	1.34E+01	1.98E+01			5.9E+04	7.3E+04		5.9E+01						
AOI-04	INORG	Iron	7439-89-6	D	3	3	1.64E+04	2.51E+04				5.8E+05		1.5E+04				1.7E-02		
AOI-04	INORG	Lead	7439-92-1	B2	3	3	6.70E+00	2.60E+01			4.4E+04	9.0E+02		6.8E+01						
AOI-04	INORG	Magnesium	7439-95-4		3	3	3.35E+03	1.75E+04			2.9E+06	1.0E+06					6.0E-03	1.8E-02		
AOI-04	INORG	Manganese	7439-96-5	D	3	3	2.85E+02	6.44E+02			1.5E+03	9.0E+04		5.2E+02			8.2E-02	1.4E-03		
AOI-04	INORG	Mercury	7439-97-6	D	3	1	1.65E-02	1.65E-02	1.80E-02	1.90E-02	6.2E+01	8.8E+03	5.8E+02	1.3E+04	1.9E-01					
AOI-04	INORG	Nickel	7440-02-0	A	3	3	1.47E+01	2.36E+01			1.6E+04	1.5E+05		1.5E+01			5.2E-04	5.5E-05		
AOI-04	INORG	Potassium	7440-09-7		3	3	9.32E+02	1.19E+03												
AOI-04	INORG	Selenium	7782-49-2	D	3	2	6.15E-01	6.90E-01	3.60E-01	3.60E-01	5.9E+04	9.6E+03		7.0E-01						
AOI-04	INORG	Sodium	7440-23-5		3	3	1.08E+02	1.25E+02				1.0E+06						1.2E-04		
AOI-04	INORG	Thallium	7440-28-0		3	1	7.15E-01	7.15E-01	6.70E-01	6.90E-01		1.3E+02		9.3E-01						
AOI-04	INORG	Vanadium	7440-62-2		3	3	1.92E+01	2.89E+01				5.5E+03		1.8E+01				1.9E-03		
AOI-04	INORG	Zinc	7440-66-6	D	3	3	4.28E+01	5.42E+01				6.3E+05		9.0E+01						
AOI-08	INORG	Aluminum	7429-90-5	D	4	4	1.70E+03	5.86E+03				3.7E+05		7.4E+03						
AOI-08	INORG	Arsenic	7440-38-2	A	4	4	2.50E+00	4.10E+00			9.1E+02	3.7E+01		6.8E+00						
AOI-08	INORG	Barium	7440-39-3	D	4	4														

**Table 2-1a: Soil Screening Results for On-Site Borings**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Industrial Soil Volatilization to Ambient Air Criteria (mg/kg)	Industrial Particulate Inhalation Criteria (mg/kg)	Industrial Direct Contact Criteria (mg/kg)	Site Specific Industrial Volatilization to Indoor Air Criteria (mg/kg)	Site Specific Background (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Ambient Air Criteria	Ratio of Max Conc to Industrial Particulate Inhalation Criteria	Ratio of Max Conc to Industrial Direct Contact Criteria	Ratio of Max Conc to Site Specific Industrial Volatilization to Indoor Air Criteria	
AOI-08	INORG	Lead	7439-92-1	B2	4	4	3.20E+00	6.80E+00			4.4E+04	9.0E+02		6.8E+01						
AOI-08	INORG	Magnesium	7439-95-4		4	4	6.48E+02	1.77E+04			2.9E+06	1.0E+06				6.1E-03	1.8E-02			
AOI-08	INORG	Manganese	7439-96-5	D	4	4	9.19E+01	2.22E+02			1.5E+03	9.0E+04		5.2E+02						
AOI-08	INORG	Nickel	7440-02-0	A	4	4	4.70E+00	1.05E+01			1.6E+04	1.5E+05		1.5E+01						
AOI-08	INORG	Potassium	7440-09-7		4	4	1.51E+02	9.12E+02												
AOI-08	INORG	Sodium	7440-23-5		4	1	6.51E+01	6.51E+01	4.22E+01	4.98E+01			1.0E+06					6.5E-05		
AOI-08	INORG	Vanadium	7440-62-2		4	4	5.90E+00	1.36E+01					5.5E+03		1.8E+01					
AOI-08	INORG	Zinc	7440-66-6	D	4	1	6.38E+01	6.38E+01	1.60E+00	1.90E+00			6.3E+05		9.0E+01					
AOI-09	INORG	Aluminum	7429-90-5	D	16	16	1.07E+03	1.24E+04					3.7E+05		7.4E+03			1.4E-02		
AOI-09	INORG	Antimony	7440-36-0		16	4	2.45E-01	3.90E-01	2.30E-01	2.80E-01	5.9E+03	6.7E+02		8.0E-01						
AOI-09	INORG	Arsenic	7440-38-2	A	16	16	1.20E+00	1.30E+01			9.1E+02	3.7E+01		6.8E+00		6.8E-03	1.7E-01			
AOI-09	INORG	Barium	7440-39-3	D	16	16	5.40E+00	1.12E+02			1.5E+05	1.3E+05		6.2E+01		3.3E-04	3.8E-04			
AOI-09	INORG	Beryllium	7440-41-7	B1	16	15	1.10E-01	7.60E-01	8.10E-02	8.10E-02	5.9E+02	1.6E+03		3.1E-01		7.6E-04	2.8E-04			
AOI-09	INORG	Cadmium	7440-43-9	B1	16	14	3.20E-02	6.20E-01	1.60E-02	1.90E-02	2.2E+03	2.1E+03		1.4E+00						
AOI-09	INORG	Calcium	7440-70-2		16	16	2.03E+03	1.03E+05												
AOI-09	INORG	Chromium (total)	7440-47-3		10	10	2.40E+00	1.92E+02			2.4E+02	9.2E+03		1.8E+01		7.3E-01	1.9E-02			
AOI-09	INORG	Chromium III	16065-83-1	D	6	6	1.07E+01	3.22E+01			1.5E+05	1.0E+06				2.1E-04	3.2E-05			
AOI-09	INORG	Chromium VI	18540-29-9	A	6	5	8.00E-02	1.40E+00	1.00E-01	1.00E-01	2.4E+02	9.2E+03				5.8E-03	1.5E-04			
AOI-09	INORG	Cobalt	7440-48-4	B1	16	16	1.10E+00	1.85E+01			5.9E+03	9.0E+03		5.8E+00		2.1E-03	1.4E-03			
AOI-09	INORG	Copper	7440-50-8	D	16	16	8.10E+00	3.28E+02			5.9E+04	7.3E+04		5.9E+01		4.6E-03	3.7E-03			
AOI-09	INORG	Cyanide (total)	57-12-5	D	16	6	2.20E-01	3.90E+00	1.00E-01	1.10E-01	2.5E+02	2.5E+02				1.6E-02	1.6E-02			
AOI-09	INORG	Iron	7439-89-6	D	16	16	2.81E+03	2.96E+04					5.8E+05		1.5E+04			2.4E-02		
AOI-09	INORG	Lead	7439-92-1	B2	16	14	2.90E+00	3.27E+01	2.30E-01	2.30E-01	4.4E+04	9.0E+02		6.8E+01						
AOI-09	INORG	Magnesium	7439-95-4		16	16	2.67E+03	2.04E+04			2.9E+06	1.0E+06				7.0E-03	2.0E-02			
AOI-09	INORG	Manganese	7439-96-5	D	16	16	7.87E+01	1.57E+03			1.5E+03	9.0E+04		5.2E+02		7.0E-01	1.2E-02			
AOI-09	INORG	Mercury	7439-97-6	D	16	9	1.90E-02	3.50E-02	1.80E-02	2.00E-02	6.2E+01	8.8E+03	5.8E+02	1.3E+04	1.9E-01					
AOI-09	INORG	Nickel	7440-02-0	A	16	16	2.70E+00	6.17E+01			1.6E+04	1.5E+05		1.5E+01		2.9E-03	3.1E-04			
AOI-09	INORG	Potassium	7440-09-7		16	16	1.99E+02	2.01E+03												
AOI-09	INORG	Selenium	7782-49-2	D	16	8	2.73E-01	1.00E+00	3.10E-01	3.80E-01	5.9E+04	9.6E+03		7.0E-01		5.1E-06	3.1E-05			
AOI-09	INORG	Sodium	7440-23-5		16	15	4.93E+01	1.80E+03	4.90E+01	4.90E+01			1.0E+06					1.8E-03		
AOI-09	INORG	Thallium	7440-28-0		16	3	7.95E-01	1.20E+00	5.80E-01	7.20E-01			1.3E+02		9.3E-01			2.1E-03		
AOI-09	INORG	Vanadium	7440-62-2		16	16	4.20E+00	3.02E+01					5.5E+03		1.8E+01			2.2E-03		
AOI-09	INORG	Zinc	7440-66-6	D	16	16	8.10E+00	9.65E+01					6.3E+05		9.0E+01			1.1E-05		
AOI-11	VOC	Benzene	71-43-2	A	36	10	2.00E-02	6.80E+00	2.00E-03	1.20E-01	4.5E+01	4.7E+05	4.0E+02	4.1E+02		1.5E-01	1.4E-05	1.7E-02	1.7E-02	
AOI-11	VOC	Cumene	98-82-8	D	5	2	1.60E-02	3.00E+00	9.20E-03	1.00E-02	2.0E+03	2.6E+06	3.9E+02	7.3E+03		1.5E-03	1.2E-06	7.7E-03	4.1E-04	
AOI-11	VOC	Cyclohexane	110-82-7	ID	5	2	1.30E-01	1.00E+01	6.70E-03	7.60E-03										
AOI-11	VOC	Ethyl Benzene	100-41-4	D	36	16	1.50E-02	1.60E+01	2.00E-03	1.00E-02	2.4E+03	1.3E+07	1.4E+02	1.5E+05		6.7E-03	1.2E-06	1.1E-01	1.0E-04	
AOI-11	VOC	Methyl tert-butyl ether	1634-04-4		12	1	1.00E-01	1.00E-01	8.90E-03	8.00E-02	3.0E+04	8.8E+07	5.9E+03			3.3E-06	1.1E-09	1.7E-05		
AOI-11	VOC	Methylcyclohexane	108-87-2		5	4	1.60E-02	2.30E+01	9.70E-03	9.70E-03										
AOI-11	VOC	Methylene Chloride	75-09-2	B2	5	3	5.80E-02	8.40E-02	1.70E-02	1.60E-01	7.0E+02	8.3E+06	2.3E+03	1.5E+04		1.2E-04	1.0E-08	3.7E-05	5.8E-06	
AOI-11	VOC	Toluene	108-88-3	D	36	16	6.00E-03	3.50E+01	2.00E-03	1.00E-02	3.3E+03	1.2E+07	2.5E+02	8.7E+04		1.1E-02	2.9E-06	1.4E-01	4.0E-04	
AOI-11	VOC	Xylenes																		

**Table 2-1a: Soil Screening Results for On-Site Borings**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Industrial Soil Volatilization to Ambient Air Criteria (mg/kg)	Industrial Particulate Inhalation Criteria (mg/kg)	Industrial Direct Contact Criteria (mg/kg)	Site Specific Industrial Volatilization to Indoor Air Criteria (mg/kg)	Site Specific Background (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Ambient Air Criteria	Ratio of Max Conc to Industrial Particulate Inhalation Criteria	Ratio of Max Conc to Industrial Direct Contact Criteria	Ratio of Max Conc to Site Specific Industrial Volatilization to Indoor Air Criteria	
AOI-13	VOC	Methylcyclohexane	108-87-2		6	3	1.70E-02	2.60E-01	1.00E-02	1.10E-02										
AOI-13	VOC	Tetrachloroethene	127-18-4	C-B2	6	1	2.60E-02	2.60E-02	1.20E-02	1.30E-02	6.0E+02	8.8E+01	1.4E+04			4.3E-05	3.8E-09	3.0E-04	1.9E-06	
AOI-13	VOC	Toluene	108-88-3	D	23	6	1.90E-02	2.90E-01	6.30E-03	1.00E-02	3.3E+03	1.2E+07	2.5E+02	8.7E+04		8.8E-05	2.4E-08	1.2E-03	3.3E-06	
AOI-13	VOC	Trichloroethene	79-01-6	C-B2	6	3	2.60E-02	2.20E-01	9.80E-03	1.10E-02	2.6E+02	2.3E+06	5.0E+02	3.9E+04		8.5E-04	9.6E-08	4.4E-04	5.7E-06	
AOI-13	VOC	Vinyl Chloride	75-01-4	A	6	1	1.10E-01	1.10E-01	1.20E-02	1.30E-02	2.9E+01	8.9E+05	3.4E+01	6.1E+01		3.8E-03	1.2E-07	3.2E-03	1.8E-03	
AOI-13	VOC	Xylenes (total)	1330-20-7	ID	23	5	3.00E-02	1.40E-01	1.00E-02	5.00E-02	5.4E+04	1.3E+08	1.5E+02	1.9E+05		2.6E-06	1.1E-09	9.3E-04	7.5E-07	
AOI-13	SVOC	Acenaphthene	83-32-9		6	1	2.40E-02	2.40E-02	1.60E-02	1.10E+00	9.7E+04	6.2E+06	1.3E+05			2.5E-07	3.9E-09	1.8E-07		
AOI-13	SVOC	Anthracene	120-12-7	D	6	1	9.40E-02	9.40E-02	1.90E-02	1.10E+00	1.6E+06	2.9E+07	7.3E+05			5.9E-08	3.2E-09	1.3E-07		
AOI-13	SVOC	Benzo(a)anthracene	56-55-3	B2	6	1	7.10E-01	7.10E-01	1.80E-02	1.00E+00			8.0E+01					8.9E-03		
AOI-13	SVOC	Benzo(a)pyrene	50-32-8	B2	6	1	6.10E-01	6.10E-01	1.70E-02	1.10E+00		1.9E+03	8.0E+00				3.2E-04	7.6E-02		
AOI-13	SVOC	Benzo(b)fluoranthene	205-99-2	B2	6	1	6.70E-01	6.70E-01	2.10E-02	1.20E+00			8.0E+01					8.4E-03		
AOI-13	SVOC	Benzo(g,h,i)perylene	191-24-2	D	6	2	3.30E-01	3.00E+00	1.80E-02	1.20E+00		3.5E+05	7.0E+03				8.6E-06	4.3E-04		
AOI-13	SVOC	Benzo(k)fluoranthene	207-08-9	B2	6	1	3.80E-01	3.80E-01	1.80E-02	1.10E+00			8.0E+02					4.8E-04		
AOI-13	SVOC	Biphenyl	92-52-4	D	6	1	3.10E-02	3.10E-02	2.10E-02	1.30E+00										
AOI-13	SVOC	Carbazole	86-74-8	B2	6	1	3.00E-02	3.00E-02	2.20E-02	1.30E+00			2.4E+03					1.3E-05		
AOI-13	SVOC	Chrysene	218-01-9	B2	6	2	7.80E-01	1.10E+00	1.80E-02	9.60E-01			8.0E+03					1.4E-04		
AOI-13	SVOC	Dibenz(a,h)anthracene	53-70-3	B2	6	1	1.30E-01	1.30E-01	2.10E-02	1.30E+00			8.0E+00					1.6E-02		
AOI-13	SVOC	Dibenzofuran	132-64-9	D	6	1	7.00E-02	7.00E-02	1.90E-02	1.10E+00										
AOI-13	SVOC	Fluoranthene	206-44-0	D	6	1	8.50E-01	8.50E-01	1.80E-02	1.40E+00	8.9E+05	4.1E+06	1.3E+05			9.6E-07	2.1E-07	6.5E-06		
AOI-13	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	6	2	3.10E-01	2.70E+00	2.20E-02	1.20E+00			8.0E+01					3.4E-02		
AOI-13	SVOC	2-Methylnaphthalene	91-57-6	ID	6	1	1.80E-01	1.80E-01	1.90E-02	1.10E+00			2.6E+04					6.9E-06		
AOI-13	SVOC	Naphthalene	91-20-3	C	6	1	9.30E-02	9.30E-02	1.90E-02	1.10E+00	3.5E+02	8.8E+04	5.2E+04	1.4E+06		2.7E-04	1.1E-06	1.8E-06	6.5E-08	
AOI-13	SVOC	Phenanthrene	85-01-8	D	6	2	4.70E-01	2.00E+00	2.10E-02	1.10E+00	1.9E+02	2.9E+03	5.2E+03			1.1E-02	6.9E-04	3.8E-04		
AOI-13	SVOC	Pyrene	129-00-0	D	6	1	8.40E-01	8.40E-01	1.80E-02	1.00E+00	7.8E+05	2.9E+06	8.4E+04			1.1E-06	2.9E-07	1.0E-05		
AOI-13	INORG	Aluminum	7429-90-5	D	6	6	1.71E+03	6.19E+03					3.7E+05		7.4E+03					
AOI-13	INORG	Antimony	7440-36-0		6	4	3.00E-01	4.30E+00	2.60E-01	2.70E-01		5.9E+03	6.7E+02		8.0E-01		5.9E-04	5.2E-03		
AOI-13	INORG	Arsenic	7440-38-2	A	6	6	1.10E+00	9.80E+00				9.1E+02	3.7E+01		6.8E+00		3.3E-03	8.1E-02		
AOI-13	INORG	Barium	7440-39-3	D	6	6	1.09E+01	5.64E+02				1.5E+05	1.3E+05		6.2E+01		3.3E-03	3.9E-03		
AOI-13	INORG	Beryllium	7440-41-7	B1	6	5	1.10E-01	3.50E-01	8.10E-02	8.10E-02		5.9E+02	1.6E+03		3.1E-01		6.0E-05	2.2E-05		
AOI-13	INORG	Cadmium	7440-43-9	B1	6	4	2.10E-02	1.70E+00	1.80E-02	1.90E-02		2.2E+03	2.1E+03		1.4E+00		1.6E-04	1.6E-04		
AOI-13	INORG	Calcium	7440-70-2		6	6	3.83E+03	5.05E+04												
AOI-13	INORG	Chromium (total)	7440-47-3		6	6	3.70E+00	3.32E+01				2.4E+02	9.2E+03		1.8E+01		6.4E-02	1.7E-03		
AOI-13	INORG	Cobalt	7440-48-4	B1	6	6	1.90E+00	8.60E+00				5.9E+03	9.0E+03		5.8E+00		4.7E-04	3.1E-04		
AOI-13	INORG	Copper	7440-50-8	D	6	6	4.10E+00	3.16E+03				5.9E+04	7.3E+04		5.9E+01		5.3E-02	4.2E-02		
AOI-13	INORG	Iron	7439-89-6	D	6	6	4.49E+03	4.18E+04					5.8E+05		1.5E+04		4.5E-02			
AOI-13	INORG	Lead	7439-92-1	B2	11	11	2.20E+00	4.29E+02				4.4E+04	9.0E+02		6.8E+01		8.2E-03	4.0E-01		
AOI-13	INORG	Magnesium	7439-95-4		6	6	1.19E+03	1.97E+04				2.9E+06	1.0E+06				6.8E-03	2.0E-02		
AOI-13	INORG	Manganese	7439-96-5	D	6	6	9.97E+01	3.75E+02				1.5E+03	9.0E+04		5.2E+02					
AOI-13	INORG	Mercury	7439-97-6	D	6	2	2.20E-02	3.00E-01	1.70E-02	1.90E-02	6.2E+01	8.8E+03	5.8E+02	1.3E+04	1.9E-01	1.8E-03	1.2E-05	1.9E-04	8.6E-06	
AOI-13	INORG	Nickel	7440-02-0																	

**Table 2-1a: Soil Screening Results for On-Site Borings**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Industrial Soil Volatilization to Ambient Air Criteria (mg/kg)	Industrial Particulate Inhalation Criteria (mg/kg)	Industrial Direct Contact Criteria (mg/kg)	Site Specific Industrial Volatilization to Indoor Air Criteria (mg/kg)	Site Specific Background (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Ambient Air Criteria	Ratio of Max Conc to Industrial Particulate Inhalation Criteria	Ratio of Max Conc to Industrial Direct Contact Criteria	Ratio of Max Conc to Site Specific Industrial Volatilization to Indoor Air Criteria		
AOI-14	INORG	Chromium (total)	7440-47-3		6	6	1.13E+01	2.50E+01			2.4E+02	9.2E+03		1.8E+01		3.0E-02	7.7E-04				
AOI-14	INORG	Cobalt	7440-48-4	B1	6	6	2.70E+00	1.17E+01			5.9E+03	9.0E+03		5.8E+00		9.9E-04	6.5E-04				
AOI-14	INORG	Copper	7440-50-8	D	6	6	4.90E+00	4.57E+01			5.9E+04	7.3E+04		5.9E+01							
AOI-14	INORG	Iron	7439-89-6	D	6	6	1.32E+04	2.42E+04				5.8E+05		1.5E+04			1.5E-02				
AOI-14	INORG	Lead	7439-92-1	B2	6	6	6.50E+00	1.40E+02			4.4E+04	9.0E+02		6.8E+01		1.6E-03	8.0E-02				
AOI-14	INORG	Magnesium	7439-95-4		6	6	7.49E+02	1.68E+04			2.9E+06	1.0E+06				5.8E-03	1.7E-02				
AOI-14	INORG	Manganese	7439-96-5	D	6	6	1.13E+02	6.24E+02			1.5E+03	9.0E+04		5.2E+02		6.8E-02	1.1E-03				
AOI-14	INORG	Mercury	7439-97-6	D	6	3	1.68E-02	2.08E-02	1.80E-02	1.90E-02	6.2E+01	8.8E+03	5.8E+02	1.3E+04	1.9E-01						
AOI-14	INORG	Nickel	7440-02-0	A	6	6	9.50E+00	2.52E+01			1.6E+04	1.5E+05		1.5E+01		6.2E-04	6.6E-05				
AOI-14	INORG	Potassium	7440-09-7		6	6	5.53E+02	1.10E+03													
AOI-14	INORG	Sodium	7440-23-5		6	6	1.90E+02	2.19E+03			1.0E+06						2.2E-03				
AOI-14	INORG	Vanadium	7440-62-2		6	6	1.20E+01	2.92E+01			5.5E+03			1.8E+01			2.0E-03				
AOI-14	INORG	Zinc	7440-66-6	D	6	6	1.90E+01	4.45E+01			6.3E+05			9.0E+01							
AOI-16	SVOC	Benzo(b)fluoranthene	205-99-2	B2	9	2	3.38E-02	4.40E-02	2.30E-02	2.70E-02		8.0E+01						5.5E-04			
AOI-16	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	9	1	4.20E-02	4.20E-02	1.50E-02	1.70E-02		8.9E+05	1.0E+04	4.8E+12			4.7E-08	4.2E-06	8.8E-15		
AOI-16	SVOC	Chrysene	218-01-9	B2	9	2	5.15E-02	6.60E-02	2.50E-02	2.90E-02		8.0E+03						8.3E-06			
AOI-16	SVOC	Fluoranthene	206-44-0	D	9	2	2.65E-02	6.40E-02	1.80E-02	2.10E-02	8.9E+05	4.1E+06	1.3E+05			7.2E-08	1.6E-08	4.9E-07			
AOI-16	SVOC	2-Methylnaphthalene	91-57-6	ID	9	2	7.90E-02	8.75E-02	1.95E-02	2.30E-02		2.6E+04						3.4E-06			
AOI-16	SVOC	Naphthalene	91-20-3	C	9	2	5.50E-02	6.05E-02	1.95E-02	2.30E-02	3.5E+02	8.8E+04	5.2E+04	1.4E+06		1.7E-04	6.9E-07	1.2E-06	4.3E-08		
AOI-16	SVOC	Phenanthrene	85-01-8	D	9	2	8.10E-02	1.30E-01	2.40E-02	2.80E-02	1.9E+02	2.9E+03	5.2E+03			6.8E-04	4.5E-05	2.5E-05			
AOI-16	SVOC	Pyrene	129-00-0	D	9	2	2.68E-02	5.10E-02	2.40E-02	2.80E-02	7.8E+05	2.9E+06	8.4E+04			6.5E-08	1.8E-08	6.1E-07			
AOI-16	INORG	Aluminum	7429-90-5	D	9	9	2.60E+03	1.43E+04				3.7E+05			7.4E+03			1.9E-02			
AOI-16	INORG	Antimony	7440-36-0		9	1	3.20E-01	3.20E-01	2.60E-01	3.10E-01		5.9E+03	6.7E+02		8.0E-01						
AOI-16	INORG	Arsenic	7440-38-2	A	9	9	1.20E+00	8.05E+00			9.1E+02	3.7E+01		6.8E+00		1.4E-03	3.4E-02				
AOI-16	INORG	Barium	7440-39-3	D	9	9	1.32E+01	6.42E+01			1.5E+05	1.3E+05		6.2E+01		1.4E-05	1.6E-05				
AOI-16	INORG	Beryllium	7440-41-7	B1	9	9	1.50E-01	6.90E-01			5.9E+02	1.6E+03		3.1E-01		6.4E-04	2.3E-04				
AOI-16	INORG	Calcium	7440-70-2		9	9	2.77E+03	5.17E+04													
AOI-16	INORG	Chromium (total)	7440-47-3		9	9	5.60E+00	4.87E+01			2.4E+02	9.2E+03		1.8E+01		1.3E-01	3.4E-03				
AOI-16	INORG	Cobalt	7440-48-4	B1	9	9	1.30E+00	1.02E+01			5.9E+03	9.0E+03		5.8E+00		7.4E-04	4.9E-04				
AOI-16	INORG	Copper	7440-50-8	D	9	9	5.40E+00	4.36E+01			5.9E+04	7.3E+04		5.9E+01							
AOI-16	INORG	Iron	7439-89-6	D	9	9	5.43E+03	2.46E+04				5.8E+05		1.5E+04			1.6E-02				
AOI-16	INORG	Lead	7439-92-1	B2	9	9	3.20E+00	2.21E+01			4.4E+04	9.0E+02		6.8E+01							
AOI-16	INORG	Magnesium	7439-95-4		9	9	6.02E+02	1.76E+04			2.9E+06	1.0E+06					6.1E-03	1.8E-02			
AOI-16	INORG	Manganese	7439-96-5	D	9	9	1.36E+02	4.56E+02			1.5E+03	9.0E+04		5.2E+02							
AOI-16	INORG	Mercury	7439-97-6	D	9	7	2.40E-02	5.65E-02	1.90E-02	2.00E-02	6.2E+01	8.8E+03	5.8E+02	1.3E+04	1.9E-01						
AOI-16	INORG	Nickel	7440-02-0	A	9	9	5.25E+00	2.62E+01			1.6E+04	1.5E+05		1.5E+01		6.8E-04	7.3E-05				
AOI-16	INORG	Potassium	7440-09-7		9	9	4.02E+02	2.03E+03													
AOI-16	INORG	Sodium	7440-23-5		9	9	1.83E+02	2.95E+03			1.0E+06						3.0E-03				
AOI-16	INORG	Vanadium	7440-62-2		9	9	6.80E+00	3.11E+01			5.5E+03			1.8E+01			2.3E-03				
AOI-16	INORG	Zinc	7440-66-6	D	9	9	9.25E+00	5.49E+01			6.3E+05			9.0E+01							
AOI-17	INORG	Aluminum	7429-90-5	D	3	3	2.33E+03	1.12E+04				3.7E+05			7.4E+03			1.0E-02			
AOI-17	INORG	Arsenic	7440-38-2	A	3	3	4.40E+00	8.60E+00			9.1E+02	3.7E+01		6.8E+00		2.0E-03	4.9E-02				

**Table 2-1a: Soil Screening Results for On-Site Borings**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Industrial Soil Volatilization to Ambient Air Criteria (mg/kg)	Industrial Particulate Inhalation Criteria (mg/kg)	Industrial Direct Contact Criteria (mg/kg)	Site Specific Industrial Volatilization to Indoor Air Criteria (mg/kg)	Site Specific Background (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Ambient Air Criteria	Ratio of Max Conc to Industrial Particulate Inhalation Criteria	Ratio of Max Conc to Industrial Direct Contact Criteria	Ratio of Max Conc to Site Specific Industrial Volatilization to Indoor Air Criteria		
AOI-17	INORG	Nickel	7440-02-0	A	3	3	1.08E+01	2.62E+01			1.6E+04	1.5E+05		1.5E+01		6.8E-04	7.3E-05				
AOI-17	INORG	Potassium	7440-09-7		3	3	2.82E+02	2.08E+03													
AOI-17	INORG	Selenium	7782-49-2	D	3	3	5.40E-01	1.60E+00			5.9E+04	9.6E+03		7.0E-01		1.5E-05	9.4E-05				
AOI-17	INORG	Sodium	7440-23-5		3	2	1.33E+02	4.99E+02	4.51E+01	4.51E+01			1.0E+06				5.0E-04				
AOI-17	INORG	Thallium	7440-28-0		3	2	1.10E+00	1.40E+00	6.50E-01	6.50E-01			1.3E+02		9.3E-01		3.6E-03				
AOI-17	INORG	Vanadium	7440-62-2		3	3	9.80E+00	2.87E+01					5.5E+03		1.8E+01		1.9E-03				
AOI-17	INORG	Zinc	7440-66-6	D	3	3	2.53E+01	6.15E+01					6.3E+05		9.0E+01						
AOI-18	INORG	Aluminum	7429-90-5	D	9	9	9.20E+02	1.31E+04					3.7E+05		7.4E+03		1.5E-02				
AOI-18	INORG	Arsenic	7440-38-2	A	9	9	1.10E+00	1.05E+01			9.1E+02	3.7E+01		6.8E+00		4.1E-03	1.0E-01				
AOI-18	INORG	Barium	7440-39-3	D	9	9	4.00E+00	7.39E+01				1.5E+05	1.3E+05		6.2E+01		7.9E-05	9.1E-05			
AOI-18	INORG	Beryllium	7440-41-7	B1	9	6	7.70E-02	7.60E-01	7.00E-02	8.40E-02		5.9E+02	1.6E+03		3.1E-01		7.6E-04	2.8E-04			
AOI-18	INORG	Cadmium	7440-43-9	B1	9	8	1.80E-02	2.10E-01	2.00E-02	2.00E-02		2.2E+03	2.1E+03		1.4E+00						
AOI-18	INORG	Calcium	7440-70-2		9	9	3.96E+02	3.72E+04													
AOI-18	INORG	Chromium (total)	7440-47-3		9	9	3.20E+00	4.90E+01			2.4E+02	9.2E+03		1.8E+01		1.3E-01	3.4E-03				
AOI-18	INORG	Cobalt	7440-48-4	B1	9	9	1.30E+00	1.21E+01			5.9E+03	9.0E+03		5.8E+00		1.1E-03	7.0E-04				
AOI-18	INORG	Copper	7440-50-8	D	9	8	3.30E+00	2.17E+01	1.70E-01	1.70E-01		5.9E+04	7.3E+04		5.9E+01						
AOI-18	INORG	Cyanide (total)	57-12-5	D	9	5	2.70E-01	8.40E+00	9.10E-02	1.10E-01		2.5E+02	2.5E+02				3.4E-02	3.4E-02			
AOI-18	INORG	Iron	7439-89-6	D	9	9	3.32E+03	2.78E+04				5.8E+05		1.5E+04				2.1E-02			
AOI-18	INORG	Lead	7439-92-1	B2	9	9	1.70E+00	1.14E+01			4.4E+04	9.0E+02		6.8E+01							
AOI-18	INORG	Magnesium	7439-95-4		9	9	5.42E+02	8.81E+03			2.9E+06	1.0E+06				3.0E-03	8.8E-03				
AOI-18	INORG	Manganese	7439-96-5	D	9	9	6.48E+01	4.54E+02			1.5E+03	9.0E+04		5.2E+02							
AOI-18	INORG	Mercury	7439-97-6	D	9	3	2.50E-02	5.25E-01	1.60E-02	2.00E-02	6.2E+01	8.8E+03	5.8E+02	1.3E+04	1.9E-01	5.4E-03	3.8E-05	5.8E-04	2.6E-05		
AOI-18	INORG	Nickel	7440-02-0	A	9	9	2.90E+00	3.01E+01			1.6E+04	1.5E+05		1.5E+01		9.2E-04	9.9E-05				
AOI-18	INORG	Potassium	7440-09-7		9	9	1.31E+02	1.34E+03													
AOI-18	INORG	Sodium	7440-23-5		9	2	3.35E+02	6.78E+02	4.12E+01	4.95E+01			1.0E+06				6.8E-04				
AOI-18	INORG	Vanadium	7440-62-2		9	9	3.60E+00	3.01E+01				5.5E+03		1.8E+01			2.1E-03				
AOI-18	INORG	Zinc	7440-66-6	D	9	9	1.15E+01	3.60E+03				6.3E+05		9.0E+01			5.6E-03				
AOI-21	VOC	Acetone	67-64-1	ID	12	3	1.60E-01	1.70E-01	5.20E-02	6.50E-02	1.6E+05	1.7E+08	7.3E+04	1.2E+07		1.1E-06	1.0E-09	2.3E-06	1.4E-08		
AOI-21	VOC	Carbon Disulfide	75-15-0		12	2	1.30E-02	1.50E-02	4.70E-03	6.10E-03	1.6E+03	2.1E+07	2.8E+02	3.5E+02		9.4E-06	7.1E-10	5.4E-05	4.3E-05		
AOI-21	VOC	Cumene	98-82-8	D	12	6	2.20E-02	8.50E-02	8.90E-03	1.20E-02	2.0E+03	2.6E+06	3.9E+02	7.3E+03		4.3E-05	3.3E-08	2.2E-04	1.2E-05		
AOI-21	VOC	Cyclohexane	110-82-7	ID	12	1	1.90E-02	1.90E-02	6.50E-03	8.40E-03											
AOI-21	VOC	1,1-Dichloroethane	75-34-3	C	12	4	2.90E-02	1.10E-01	1.10E-02	1.30E-02	2.5E+03	1.5E+07	8.9E+02	3.8E+04		4.4E-05	7.3E-09	1.2E-04	2.9E-06		
AOI-21	VOC	cis-1,2-Dichloroethene	156-59-2	D	12	4	1.90E-02	2.80E-01	8.20E-03	1.10E-02	2.1E+02	1.0E+06	6.4E+02	1.1E+05		1.3E-03	2.8E-07	4.4E-04	2.6E-06		
AOI-21	VOC	Ethyl Benzene	100-41-4	D	12	6	2.90E-02	1.20E-01	6.80E-03	8.80E-03	2.4E+03	1.3E+07	1.4E+02	1.5E+05		5.0E-05	9.2E-09	8.6E-04	7.8E-07		
AOI-21	VOC	Methyl Acetate	79-20-9		12	12	3.40E-02	1.30E-01					2.0E+06					6.4E-08			
AOI-21	VOC	4-Methyl-2-pentanone	108-10-1	ID	12	1	9.80E-02	9.80E-02	2.50E-02	3.20E-02	5.3E+04	6.0E+07	2.7E+03	1.0E+06		1.8E-06	1.6E-09	3.6E-05	9.4E-08		
AOI-21	VOC	Methylcyclohexane	108-87-2		12	4	2.60E-02	8.50E-02	9.30E-03	1.20E-02											
AOI-21	VOC	Methylene Chloride	75-09-2	B2	12	3	5.10E-02	1.70E-01	1.70E-02	2.20E-02	7.0E+02	8.3E+06	2.3E+03	1.5E+04		2.4E-04	2.0E-08	7.4E-05	1.2E-05		
AOI-21	VOC	Toluene	108-88-3	D	12	8	2.10E-02	8.60E-02	5.90E-03	6.70E-03	3.3E+03	1.2E+07	2.5E+02	8.7E+04		2.6E-05	7.2E-09	3.4E-04	9.9E-07		
AOI-21	VOC	Trichloroethene	79-01-6	C-B2	12	3	2.90E-02	2.40E-01	9.10E-03	1.00E-02											

**Table 2-1a: Soil Screening Results for On-Site Borings**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Industrial Soil Volatilization to Ambient Air Criteria (mg/kg)	Industrial Particulate Inhalation Criteria (mg/kg)	Industrial Direct Contact Criteria (mg/kg)	Site Specific Industrial Volatilization to Indoor Air Criteria (mg/kg)	Site Specific Background (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Ambient Air Criteria	Ratio of Max Conc to Industrial Particulate Inhalation Criteria	Ratio of Max Conc to Industrial Direct Contact Criteria	Ratio of Max Conc to Site Specific Industrial Volatilization to Indoor Air Criteria		
AOI-21	INORG	Antimony	7440-36-0		12	1	5.70E-01	5.70E-01	2.40E-01	3.10E-01		5.9E+03	6.7E+02		8.0E-01						
AOI-21	INORG	Arsenic	7440-38-2	A	12	12	9.70E-01	6.80E+00				9.1E+02	3.7E+01		6.8E+00		3.7E-06	9.1E-05			
AOI-21	INORG	Barium	7440-39-3	D	12	12	9.00E+00	1.11E+02				1.5E+05	1.3E+05		6.2E+01		3.3E-04	3.8E-04			
AOI-21	INORG	Beryllium	7440-41-7	B1	12	12	1.10E-01	5.30E-01				5.9E+02	1.6E+03		3.1E-01		3.7E-04	1.3E-04			
AOI-21	INORG	Cadmium	7440-43-9	B1	12	10	1.90E-02	6.10E-01	1.80E-02	1.80E-02		2.2E+03	2.1E+03		1.4E+00						
AOI-21	INORG	Calcium	7440-70-2		12	12	1.68E+04	5.32E+04													
AOI-21	INORG	Chromium (total)	7440-47-3		12	12	3.10E+00	3.41E+01				2.4E+02	9.2E+03		1.8E+01		6.8E-02	1.8E-03			
AOI-21	INORG	Cobalt	7440-48-4	B1	12	12	1.40E+00	3.49E+01				5.9E+03	9.0E+03		5.8E+00		4.9E-03	3.2E-03			
AOI-21	INORG	Copper	7440-50-8	D	12	12	3.10E+00	1.53E+02				5.9E+04	7.3E+04		5.9E+01		1.6E-03	1.3E-03			
AOI-21	INORG	Iron	7439-89-6	D	12	12	3.16E+03	1.81E+04				5.8E+05			1.5E+04		4.5E-03				
AOI-21	INORG	Lead	7439-92-1	B2	12	12	1.70E+00	1.94E+02				4.4E+04	9.0E+02		6.8E+01		2.9E-03	1.4E-01			
AOI-21	INORG	Magnesium	7439-95-4		12	12	3.10E+03	1.91E+04				2.9E+06	1.0E+06				6.6E-03	1.9E-02			
AOI-21	INORG	Manganese	7439-96-5	D	12	12	6.37E+01	7.71E+02				1.5E+03	9.0E+04		5.2E+02		1.7E-01	2.8E-03			
AOI-21	INORG	Mercury	7439-97-6	D	12	4	2.10E-02	1.50E-01	1.70E-02	2.20E-02	6.2E+01	8.8E+03	5.8E+02	1.3E+04	1.9E-01						
AOI-21	INORG	Nickel	7440-02-0	A	12	11	5.00E+00	4.42E+01	1.70E-01	1.70E-01		1.6E+04	1.5E+05		1.5E+01		1.8E-03	1.9E-04			
AOI-21	INORG	Potassium	7440-09-7		12	12	1.99E+02	8.93E+02													
AOI-21	INORG	Sodium	7440-23-5		12	4	5.48E+01	9.17E+01	4.18E+01	5.42E+01				1.0E+06				9.2E-05			
AOI-21	INORG	Vanadium	7440-62-2		12	12	5.40E+00	2.04E+01						5.5E+03		1.8E+01		3.8E-04			
AOI-21	INORG	Zinc	7440-66-6	D	12	7	2.97E+01	2.28E+02	1.60E+00	1.70E+00				6.3E+05		9.0E+01		2.2E-04			
AOI-22	VOC	Methyl Acetate	79-20-9		5	1	4.80E-02	4.80E-02	2.70E-02	3.40E-02					2.0E+06				2.4E-08		
AOI-22	VOC	Toluene	108-88-3	D	5	3	1.80E-02	2.70E-02	6.75E-03	7.90E-03	3.3E+03	1.2E+07	2.5E+02	8.7E+04			8.2E-06	2.3E-09	1.1E-04	3.1E-07	
AOI-22	VOC	1,1,1-Trichloroethane	71-55-6	D	5	1	2.10E-02	2.10E-02	9.90E-03	1.07E-02	4.5E+03	2.9E+07	4.6E+02	1.3E+05			4.7E-06	7.2E-10	4.6E-05	1.6E-07	
AOI-22	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	5	1	3.03E-02	3.03E-02	1.60E-02	3.80E-01		8.9E+05	1.0E+04	4.8E+12				3.4E-08	3.0E-06	6.4E-15	
AOI-22	SVOC	Fluoranthene	206-44-0	D	5	1	4.50E-01	4.50E-01	2.00E-02	4.70E-01	8.9E+05	4.1E+06	1.3E+05				5.1E-07	1.1E-07	3.5E-06		
AOI-22	SVOC	Pyrene	129-00-0	D	5	1	7.90E-01	7.90E-01	2.60E-02	6.20E-01	7.8E+05	2.9E+06	8.4E+04				1.0E-06	2.7E-07	9.4E-06		
AOI-22	INORG	Aluminum	7429-90-5	D	5	5	1.80E+03	5.11E+03						3.7E+05		7.4E+03					
AOI-22	INORG	Arsenic	7440-38-2	A	5	5	1.00E+00	7.40E+00				9.1E+02	3.7E+01		6.8E+00		6.6E-04	1.6E-02			
AOI-22	INORG	Barium	7440-39-3	D	5	5	6.30E+00	4.37E+01				1.5E+05	1.3E+05		6.2E+01						
AOI-22	INORG	Beryllium	7440-41-7	B1	5	5	1.10E-01	3.30E-01				5.9E+02	1.6E+03		3.1E-01		2.6E-05	9.7E-06			
AOI-22	INORG	Cadmium	7440-43-9	B1	5	2	3.90E-02	7.50E-02	1.80E-02	2.00E-02		2.2E+03	2.1E+03		1.4E+00						
AOI-22	INORG	Calcium	7440-70-2		5	5	2.44E+04	4.06E+04													
AOI-22	INORG	Chromium (total)	7440-47-3		5	5	4.30E+00	2.10E+01				2.4E+02	9.2E+03		1.8E+01		1.3E-02	3.4E-04			
AOI-22	INORG	Cobalt	7440-48-4	B1	5	5	2.00E+00	7.30E+00				5.9E+03	9.0E+03		5.8E+00		2.5E-04	1.6E-04			
AOI-22	INORG	Copper	7440-50-8	D	5	5	4.20E+00	3.33E+01				5.9E+04	7.3E+04		5.9E+01						
AOI-22	INORG	Iron	7439-89-6	D	5	5	4.63E+03	2.51E+04						5.8E+05		1.5E+04		1.7E-02			
AOI-22	INORG	Lead	7439-92-1	B2	5	5	2.20E+00	2.87E+01				4.4E+04	9.0E+02		6.8E+01						
AOI-22	INORG	Magnesium	7439-95-4		5	5	8.11E+03	1.45E+04				2.9E+06	1.0E+06				5.0E-03	1.5E-02			
AOI-22	INORG	Manganese	7439-96-5	D	5	5	8.55E+01	3.42E+02				1.5E+03	9.0E+04		5.2E+02						
AOI-22	INORG	Mercury	7439-97-6	D	5	1	1.20E-01	1.20E-01	1.80E-02	2.00E-02	6.2E+01	8.8E+03	5.8E+02	1.3E+04	1.9E-01						
AOI-22	INORG	Nickel	7440-02-0	A	5	5	4.50E+00	1.81E+01				1.6E+04	1.5E+05		1.5E+01		1.7E-04	1.9E-05			
AOI-22	INORG	Potassium	7440-09-7		5	5	2.56E+02	7.40E+02													
AOI-22	INORG	Selenium																			

**Table 2-1a: Soil Screening Results for On-Site Borings**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Industrial Soil Volatilization to Ambient Air Criteria (mg/kg)	Industrial Particulate Inhalation Criteria (mg/kg)	Industrial Direct Contact Criteria (mg/kg)	Site Specific Industrial Volatilization to Indoor Air Criteria (mg/kg)	Site Specific Background (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Ambient Air Criteria	Ratio of Max Conc to Industrial Particulate Inhalation Criteria	Ratio of Max Conc to Industrial Direct Contact Criteria	Ratio of Max Conc to Site Specific Industrial Volatilization to Indoor Air Criteria		
AOI-23	VOC	Tetrachloroethene	127-18-4	C-B2	9	2	4.50E-01	1.80E+00	1.30E-02	1.40E-02	6.0E+02	6.8E+06	8.8E+01	1.4E+04		3.0E-03	2.6E-07	2.0E-02	1.3E-04		
AOI-23	VOC	Toluene	108-88-3	D	9	2	2.56E-02	5.70E-01	6.50E-03	7.10E-03	3.3E+03	1.2E+07	2.5E+02	8.7E+04		1.7E-04	4.8E-08	2.3E-03	6.6E-06		
AOI-23	VOC	Xylenes (total)	1330-20-7	ID	9	2	5.30E-02	7.30E-01	2.20E-02	2.40E-02	5.4E+04	1.3E+08	1.5E+02	1.9E+05		1.4E-05	5.6E-09	4.9E-03	3.9E-06		
AOI-23	SVOC	Anthracene	120-12-7	D	9	1	9.00E-02	9.00E-02	1.90E-02	2.10E-02	1.6E+06	2.9E+07	7.3E+05			5.6E-08	3.1E-09	1.2E-07			
AOI-23	SVOC	Benzo(a)anthracene	56-55-3	B2	9	1	2.30E-01	2.30E-01	2.50E-02	2.90E-02			8.0E+01					2.9E-03			
AOI-23	SVOC	Benzo(a)pyrene	50-32-8	B2	9	1	2.10E-01	2.10E-01	1.60E-02	1.90E-02		1.9E+03	8.0E+00				1.1E-04	2.6E-02			
AOI-23	SVOC	Benzo(b)fluoranthene	205-99-2	B2	9	1	2.30E-01	2.30E-01	2.20E-02	2.50E-02			8.0E+01					2.9E-03			
AOI-23	SVOC	Benzo(g,h,i)perylene	191-24-2	D	9	1	1.30E-01	1.30E-01	1.80E-02	2.00E-02		3.5E+05	7.0E+03				3.7E-07	1.9E-05			
AOI-23	SVOC	Benzo(k)fluoranthene	207-08-9	B2	9	1	1.40E-01	1.40E-01	1.80E-02	2.00E-02			8.0E+02					1.8E-04			
AOI-23	SVOC	Carbazole	86-74-8	B2	9	1	5.00E-02	5.00E-02	2.10E-02	2.40E-02			2.4E+03					2.1E-05			
AOI-23	SVOC	Chrysene	218-01-9	B2	9	2	3.70E-02	2.50E-01	2.50E-02	2.80E-02			8.0E+03					3.1E-05			
AOI-23	SVOC	Fluoranthene	206-44-0	D	9	2	4.90E-02	5.00E-01	1.85E-02	2.00E-02	8.9E+05	4.1E+06	1.3E+05			5.6E-07	1.2E-07	3.8E-06			
AOI-23	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	9	1	1.20E-01	1.20E-01	2.10E-02	2.40E-02			8.0E+01					1.5E-03			
AOI-23	SVOC	2-Methylnaphthalene	91-57-6	ID	9	1	4.60E-02	4.60E-02	2.00E-02	2.10E-02			2.6E+04					1.8E-06			
AOI-23	SVOC	Phenanthrene	85-01-8	D	9	2	5.40E-02	3.50E-01	2.40E-02	2.70E-02	1.9E+02	2.9E+03				1.8E-03	1.2E-04	6.7E-05			
AOI-23	SVOC	Pyrene	129-00-0	D	9	2	4.40E-02	3.90E-01	2.40E-02	2.70E-02	7.8E+05	2.9E+06	8.4E+04			5.0E-07	1.3E-07	4.6E-06			
AOI-23	P/PCB	PCBs (total)	1336-36-3	B2	9	1	5.77E-02	5.77E-02	2.20E-02	2.50E-02	8.1E+02	6.5E+03	1.6E+01	4.0E+05		7.1E-05	8.9E-06	3.6E-03	1.5E-07		
AOI-23	INORG	Aluminum	7429-90-5	D	9	9	9.33E+02	8.67E+03					3.7E+05		7.4E+03			3.5E-03			
AOI-23	INORG	Antimony	7440-36-0		9	3	3.60E-01	4.40E-01	2.65E-01	2.90E-01		5.9E+03	6.7E+02		8.0E-01						
AOI-23	INORG	Arsenic	7440-38-2	A	9	9	3.00E+00	7.60E+00					9.1E+02	3.7E+01		6.8E+00		8.8E-04	2.2E-02		
AOI-23	INORG	Barium	7440-39-3	D	9	9	3.30E+00	5.39E+01					1.5E+05	1.3E+05		6.2E+01					
AOI-23	INORG	Beryllium	7440-41-7	B1	9	8	1.00E-01	4.80E-01	8.20E-02	8.20E-02		5.9E+02	1.6E+03		3.1E-01		2.8E-04	1.0E-04			
AOI-23	INORG	Cadmium	7440-43-9	B1	9	6	3.20E-02	9.80E-02	1.85E-02	2.00E-02		2.2E+03	2.1E+03		1.4E+00						
AOI-23	INORG	Calcium	7440-70-2		9	9	2.11E+03	9.05E+04													
AOI-23	INORG	Chromium (total)	7440-47-3		9	9	2.50E+00	2.12E+01				2.4E+02	9.2E+03		1.8E+01		1.4E-02	3.6E-04			
AOI-23	INORG	Cobalt	7440-48-4	B1	9	9	1.70E+00	7.10E+00				5.9E+03	9.0E+03		5.8E+00		2.2E-04	1.4E-04			
AOI-23	INORG	Copper	7440-50-8	D	9	9	4.70E+00	4.10E+01				5.9E+04	7.3E+04		5.9E+01						
AOI-23	INORG	Cyanide (total)	57-12-5	D	9	2	1.10E-01	2.20E-01	9.60E-02	1.10E-01		2.5E+02	2.5E+02				8.8E-04	8.8E-04			
AOI-23	INORG	Iron	7439-89-6	D	9	9	3.05E+03	1.76E+04					5.8E+05		1.5E+04			3.7E-03			
AOI-23	INORG	Lead	7439-92-1	B2	9	9	2.00E+00	1.05E+01				4.4E+04	9.0E+02		6.8E+01						
AOI-23	INORG	Magnesium	7439-95-4		9	9	1.50E+03	2.84E+04				2.9E+06	1.0E+06				9.8E-03	2.8E-02			
AOI-23	INORG	Manganese	7439-96-5	D	9	9	8.65E+01	4.47E+02				1.5E+03	9.0E+04		5.2E+02						
AOI-23	INORG	Mercury	7439-97-6	D	9	4	1.90E-02	3.10E-02	1.90E-02	2.00E-02	6.2E+01	8.8E+03	5.8E+02	1.3E+04	1.9E-01						
AOI-23	INORG	Nickel	7440-02-0	A	9	9	3.20E+00	1.81E+01				1.6E+04	1.5E+05		1.5E+01		1.7E-04	1.9E-05			
AOI-23	INORG	Potassium	7440-09-7		9	9	1.23E+02	1.22E+03													
AOI-23	INORG	Silver	7440-22-4	D	9	1	3.30E-01	3.30E-01	1.20E-01	1.30E-01		2.9E+03	9.0E+03		1.0E+00						
AOI-23	INORG	Sodium	7440-23-5		9	6	6.72E+01	5.81E+02	4.64E+01	4.80E+01			1.0E+06					5.8E-04			
AOI-23	INORG	Vanadium	7440-62-2		9	9	3.90E+00	2.11E+01				5.5E+03		1.8E+01			5.1E-04				
AOI-23	INORG	Zinc	7440-66-6	D	9	9	1.61E+01	4.25E+01				6.3E+05		9.0E+01							
AOI-25	VOC	Acetone	67-64-1	ID	15	3	1.40E-01	4.10E-01	5.40E-02	9.40E											

**Table 2-1a: Soil Screening Results for On-Site Borings**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Industrial Soil Volatilization to Ambient Air Criteria (mg/kg)	Industrial Particulate Inhalation Criteria (mg/kg)	Industrial Direct Contact Criteria (mg/kg)	Site Specific Industrial Volatilization to Indoor Air Criteria (mg/kg)	Site Specific Background (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Ambient Air Criteria	Ratio of Max Conc to Industrial Particulate Inhalation Criteria	Ratio of Max Conc to Industrial Direct Contact Criteria	Ratio of Max Conc to Site Specific Industrial Volatilization to Indoor Air Criteria			
AOI-25	VOC	Xylenes (total)	1330-20-7	ID	15	7	9.40E-02	3.10E+00	2.20E-02	2.70E-02	5.4E+04	1.3E+08	1.5E+02	1.9E+05		5.7E-05	2.4E-08	2.1E-02	1.7E-05			
AOI-25	SVOC	Acenaphthylene	208-96-8	D	15	1	5.30E-02	5.30E-02	2.20E-02	2.40E-02	2.7E+03	1.0E+06	5.2E+03			2.0E-05	5.3E-08	1.0E-05				
AOI-25	SVOC	Anthracene	120-12-7	D	15	1	5.70E-02	5.70E-02	1.90E-02	2.20E-02	1.6E+06	2.9E+07	7.3E+05			3.6E-08	2.0E-09	7.8E-08				
AOI-25	SVOC	Benzo(a)anthracene	56-55-3	B2	15	2	5.70E-02	1.80E-01	2.60E-02	2.90E-02			8.0E+01					2.3E-03				
AOI-25	SVOC	Benzo(a)pyrene	50-32-8	B2	15	2	7.20E-02	2.00E-01	1.70E-02	1.90E-02		1.9E+03	8.0E+00				1.1E-04	2.5E-02				
AOI-25	SVOC	Benzo(b)fluoranthene	205-99-2	B2	15	2	1.30E-01	4.10E-01	2.30E-02	2.50E-02			8.0E+01					5.1E-03				
AOI-25	SVOC	Benzo(g,h,i)perylene	191-24-2	D	15	2	4.80E-02	1.70E-01	1.80E-02	2.00E-02		3.5E+05	7.0E+03				4.9E-07	2.4E-05				
AOI-25	SVOC	Benzo(k)fluoranthene	207-08-9	B2	15	2	5.20E-02	2.10E-01	1.80E-02	2.00E-02			8.0E+02					2.6E-04				
AOI-25	SVOC	Carbazole	86-74-8	B2	15	1	4.50E-02	4.50E-02	2.20E-02	2.40E-02			2.4E+03					1.9E-05				
AOI-25	SVOC	Chrysene	218-01-9	B2	15	2	9.30E-02	3.00E-01	2.50E-02	2.80E-02			8.0E+03					3.8E-05				
AOI-25	SVOC	Dibenzofuran	132-64-9	D	15	1	1.20E-01	1.20E-01	1.90E-02	2.20E-02												
AOI-25	SVOC	Fluoranthene	206-44-0	D	15	3	4.40E-02	4.30E-01	1.80E-02	2.00E-02	8.9E+05	4.1E+06	1.3E+05			4.8E-07	1.0E-07	3.3E-06				
AOI-25	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	15	2	4.30E-02	1.60E-01	2.20E-02	2.40E-02			8.0E+01					2.0E-03				
AOI-25	SVOC	2-Methylnaphthalene	91-57-6	ID	15	5	4.40E-02	4.50E-01	1.90E-02	2.20E-02			2.6E+04					1.7E-05				
AOI-25	SVOC	Naphthalene	91-20-3	C	15	4	4.30E-02	2.90E-01	1.90E-02	2.20E-02	3.5E+02	8.8E+04	5.2E+04	1.4E+06		8.3E-04	3.3E-06	5.6E-06	2.0E-07			
AOI-25	SVOC	Phenanthrene	85-01-8	D	15	2	4.20E-02	3.00E-01	2.40E-02	2.70E-02	1.9E+02	2.9E+03	5.2E+03			1.6E-03	1.0E-04	5.8E-05				
AOI-25	SVOC	Pyrene	129-00-0	D	15	3	4.20E-02	2.90E-01	2.40E-02	2.70E-02	7.8E+05	2.9E+06	8.4E+04			3.7E-07	1.0E-07	3.5E-06				
AOI-25	P/PCB	PCBs (total)	1336-36-3	B2	15	2	5.71E-02	3.40E-01	2.30E-02	2.50E-02	8.1E+02	6.5E+03	1.6E+01	4.0E+05		4.2E-04	5.2E-05	2.1E-02	8.6E-07			
AOI-25	INORG	Aluminum	7429-90-5	D	15	15	4.06E+03	1.40E+04					3.7E+05		7.4E+03			1.8E-02				
AOI-25	INORG	Antimony	7440-36-0		15	3	3.10E-01	4.80E-01	2.60E-01	2.90E-01		5.9E+03	6.7E+02		8.0E-01							
AOI-25	INORG	Arsenic	7440-38-2	A	15	15	4.20E+00	9.90E+00					9.1E+02	3.7E+01		6.8E+00		3.4E-03	8.4E-02			
AOI-25	INORG	Barium	7440-39-3	D	15	15	1.78E+01	1.03E+02					1.5E+05	1.3E+05		6.2E+01		2.7E-04	3.2E-04			
AOI-25	INORG	Beryllium	7440-41-7	B1	15	15	2.30E-01	8.40E-01					5.9E+02	1.6E+03		3.1E-01		8.9E-04	3.3E-04			
AOI-25	INORG	Cadmium	7440-43-9	B1	15	13	6.90E-02	4.80E-01	2.00E-02	2.00E-02			2.2E+03	2.1E+03		1.4E+00						
AOI-25	INORG	Calcium	7440-70-2		15	15	3.39E+03	7.03E+04														
AOI-25	INORG	Chromium (total)	7440-47-3		15	15	8.10E+00	2.31E+01					2.4E+02	9.2E+03		1.8E+01		2.2E-02	5.7E-04			
AOI-25	INORG	Cobalt	7440-48-4	B1	15	15	5.40E+00	1.39E+01					5.9E+03	9.0E+03		5.8E+00		1.4E-03	9.0E-04			
AOI-25	INORG	Copper	7440-50-8	D	15	15	1.23E+01	3.33E+01					5.9E+04	7.3E+04		5.9E+01						
AOI-25	INORG	Cyanide (total)	57-12-5	D	15	1	1.40E-01	1.40E-01	1.00E-01	1.10E-01		2.5E+02	2.5E+02				5.6E-04	5.6E-04				
AOI-25	INORG	Iron	7439-89-6	D	15	15	1.17E+04	2.75E+04					5.8E+05		1.5E+04			2.1E-02				
AOI-25	INORG	Lead	7439-92-1	B2	15	15	5.90E+00	1.72E+01					4.4E+04	9.0E+02		6.8E+01						
AOI-25	INORG	Magnesium	7439-95-4		15	15	3.19E+03	3.36E+04					2.9E+06	1.0E+06				1.2E-02	3.4E-02			
AOI-25	INORG	Manganese	7439-96-5	D	15	15	2.69E+02	5.96E+02					1.5E+03	9.0E+04		5.2E+02		5.0E-02	8.3E-04			
AOI-25	INORG	Mercury	7439-97-6	D	15	6	2.70E-02	1.70E-01	1.80E-02	2.00E-02	6.2E+01	8.8E+03	5.8E+02	1.3E+04	1.9E-01							
AOI-25	INORG	Nickel	7440-02-0	A	15	15	1.22E+01	2.96E+01					1.6E+04	1.5E+05		1.5E+01		8.9E-04	9.5E-05			
AOI-25	INORG	Potassium	7440-09-7		15	15	6.53E+02	2.13E+03														
AOI-25	INORG	Selenium	7782-49-2	D	15	4	5.20E-01	2.70E+00	3.50E-01	4.10E-01		5.9E+04	9.6E+03		7.0E-01		3.4E-05	2.1E-04				
AOI-25	INORG	Sodium	7440-23-5		15	15	1.81E+02	1.09E+03					1.0E+06					1.1E-03				
AOI-25	INORG	Vanadium	7440-62-2		15	15	1.30E+01	3.31E+01					5.5E+03		1.8E+01			2.7E-03				

**Table 2-1a: Soil Screening Results for On-Site Borings**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Industrial Soil Volatilization to Ambient Air Criteria (mg/kg)	Industrial Particulate Inhalation Criteria (mg/kg)	Industrial Direct Contact Criteria (mg/kg)	Site Specific Industrial Volatilization to Indoor Air Criteria (mg/kg)	Site Specific Background (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Ambient Air Criteria	Ratio of Max Conc to Industrial Particulate Inhalation Criteria	Ratio of Max Conc to Industrial Direct Contact Criteria	Ratio of Max Conc to Site Specific Industrial Volatilization to Indoor Air Criteria		
AOI-26	VOC	Methylcyclohexane	108-87-2		33	12	1.10E-02	2.30E-01	1.00E-02	1.60E-02											
AOI-26	VOC	Tetrachloroethene	127-18-4	C-B2	107	6	1.50E-02	7.20E-01	1.20E-02	1.90E-02	6.0E+02	8.8E+01	1.4E+04			1.2E-03	1.1E-07	8.2E-03	5.2E-05		
AOI-26	VOC	Toluene	108-88-3	D	121	18	1.40E-02	4.10E+00	6.30E-03	1.00E-02	3.3E+03	1.2E+07	2.5E+02	8.7E+04		1.2E-03	3.4E-07	1.6E-02	4.7E-05		
AOI-26	VOC	1,2,4-Trichlorobenzene	120-82-1	D	33	1	1.40E-02	1.40E-02	1.20E-02	2.50E-02	3.4E+04	1.1E+03				4.1E-07	1.3E-09	1.3E-05			
AOI-26	VOC	1,1,1-Trichloroethane	71-55-6	D	107	18	1.00E-02	3.10E+01	9.50E-03	2.00E-02	4.5E+03	2.9E+07	4.6E+02	1.3E+05		6.9E-03	1.1E-06	6.7E-02	2.4E-04		
AOI-26	VOC	Trichloroethene	79-01-6	C-B2	107	13	7.60E-02	1.20E+01	9.30E-03	2.00E-02	2.6E+02	2.3E+06	5.0E+02	3.9E+04		4.6E-02	5.2E-06	2.4E-02	3.1E-04		
AOI-26	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		33	3	3.20E-01	9.70E-01	3.10E-02	6.50E-02	2.1E+05	2.3E+09	5.5E+02	2.2E+05		4.6E-06	4.2E-10	1.8E-03	4.4E-06		
AOI-26	VOC	Vinyl Chloride	75-01-4	A	33	1	2.50E-02	2.50E-02	1.20E-02	2.50E-02	2.9E+01	8.9E+05	3.4E+01	6.1E+01		8.6E-04	2.8E-08	7.4E-04	4.1E-04		
AOI-26	VOC	Xylenes (total)	1330-20-7	ID	121	19	2.40E-02	2.57E+01	2.10E-02	3.40E-02	5.4E+04	1.3E+08	1.5E+02	1.9E+05		4.8E-04	2.0E-07	1.7E-01	1.4E-04		
AOI-26	SVOC	Benzo(a)anthracene	56-55-3	B2	48	1	4.70E+00	4.70E+00	2.50E-02	3.30E-01			8.0E+01					5.9E-02			
AOI-26	SVOC	Benzo(a)pyrene	50-32-8	B2	48	1	2.20E-02	2.20E-02		3.30E-01		1.9E+03	8.0E+00					1.2E-05	2.8E-03		
AOI-26	SVOC	Benzo(b)fluoranthene	205-99-2	B2	48	3	2.50E-02	1.20E+00		3.30E-01			8.0E+01						1.5E-02		
AOI-26	SVOC	Benzo(k)fluoranthene	207-08-9	B2	48	1	8.50E-01	8.50E-01	1.70E-02	3.30E-01			8.0E+02						1.1E-03		
AOI-26	SVOC	Biphenyl	92-52-4	D	33	1	4.00E-02	4.00E-02	2.00E-02	2.30E-02											
AOI-26	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	33	19	1.33E-02	2.70E-01	1.50E-02	1.60E-02		8.9E+05	1.0E+04	4.8E+12			3.0E-07	2.7E-05	5.7E-14		
AOI-26	SVOC	Chrysene	218-01-9	B2	48	2	3.70E-02	3.90E-02	2.40E-02	3.30E-01			8.0E+03					4.9E-06			
AOI-26	SVOC	Di-n-butylphthalate	84-74-2	D	33	1	2.40E-01	2.40E-01	2.50E-02	2.90E-02		1.5E+06	7.6E+02	9.7E+10			1.6E-07	3.2E-04	2.5E-12		
AOI-26	SVOC	Fluoranthene	206-44-0	D	48	5	2.00E-02	3.70E-02	1.80E-02	3.30E-01	8.9E+05	4.1E+06	1.3E+05			4.2E-08	9.0E-09	2.8E-07			
AOI-26	SVOC	2-Methylnaphthalene	91-57-6	ID	33	2	3.80E-02	3.80E-02	1.80E-02	2.10E-02			2.6E+04					1.5E-06			
AOI-26	SVOC	Naphthalene	91-20-3	C	48	4	2.30E-02	3.90E-02	1.80E-02	3.30E-01	3.5E+02	8.8E+04	5.2E+04	1.4E+06		1.1E-04	4.4E-07	7.5E-07	2.7E-08		
AOI-26	SVOC	Phenanthrene	85-01-8	D	48	2	3.30E-02	5.80E-02	2.30E-02	3.30E-01	1.9E+02	2.9E+03	5.2E+03			3.1E-04	2.0E-05	1.1E-05			
AOI-26	SVOC	Pyrene	129-00-0	D	48	2	3.70E-02	3.10E+00	2.30E-02	3.30E-01	7.8E+05	2.9E+06	8.4E+04			4.0E-06	1.1E-06	3.7E-05			
AOI-26	INORG	Aluminum	7429-90-5	D	33	33	4.38E+03	1.68E+04					3.7E+05		7.4E+03			2.5E-02			
AOI-26	INORG	Antimony	7440-36-0		33	13	3.03E-01	4.00E+00	2.50E-01	2.90E-01		5.9E+03	6.7E+02		8.0E-01		5.4E-04	4.8E-03			
AOI-26	INORG	Arsenic	7440-38-2	A	98	74	5.10E-01	5.48E+01	5.00E+00	5.00E+00		9.1E+02	3.7E+01		6.8E+00		5.3E-02	1.3E+00			
AOI-26	INORG	Barium	7440-39-3	D	98	98	9.00E+00	2.11E+02				1.5E+05	1.3E+05		6.2E+01		9.9E-04	1.1E-03			
AOI-26	INORG	Beryllium	7440-41-7	B1	33	33	1.20E-01	8.50E-01				5.9E+02	1.6E+03		3.1E-01		9.1E-04	3.3E-04			
AOI-26	INORG	Cadmium	7440-43-9	B1	98	33	1.50E-01	3.30E+00	2.00E-03	2.00E+00		2.2E+03	2.1E+03		1.4E+00		8.8E-04	9.3E-04			
AOI-26	INORG	Calcium	7440-70-2		33	33	1.67E+03	5.95E+04													
AOI-26	INORG	Chromium (total)	7440-47-3		98	83	4.20E+00	6.80E+01	5.00E+00	5.00E+00		2.4E+02	9.2E+03		1.8E+01		2.1E-01	5.4E-03			
AOI-26	INORG	Cobalt	7440-48-4	B1	33	33	3.80E+00	2.37E+01				5.9E+03	9.0E+03		5.8E+00		3.0E-03	2.0E-03			
AOI-26	INORG	Copper	7440-50-8	D	98	98	3.30E+00	6.10E+03				5.9E+04	7.3E+04		5.9E+01		1.0E-01	8.3E-02			
AOI-26	INORG	Cyanide (total)	57-12-5	D	98	1	7.50E-02	7.50E-02	9.60E-02	5.00E-01		2.5E+02	2.5E+02				3.0E-04	3.0E-04			
AOI-26	INORG	Iron	7439-89-6	D	33	33	1.02E+04	3.29E+04					5.8E+05		1.5E+04		3.0E-02				
AOI-26	INORG	Lead	7439-92-1	B2	98	98	4.80E+00	5.61E+02				4.4E+04	9.0E+02		6.8E+01		1.1E-02	5.5E-01			
AOI-26	INORG	Magnesium	7439-95-4		33	33	1.98E+03	2.07E+04				2.9E+06	1.0E+06				7.1E-03	2.1E-02			
AOI-26	INORG	Manganese	7439-96-5	D	33	33	8.75E+01	1.73E+03				1.5E+03	9.0E+04		5.2E+02		8.1E-01	1.3E-02			
AOI-26	INORG	Mercury	7439-97-6	D	98	13	2.10E-02	3.70E-01													

**Table 2-1a: Soil Screening Results for On-Site Borings**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Industrial Soil Volatilization to Ambient Air Criteria (mg/kg)	Industrial Particulate Inhalation Criteria (mg/kg)	Industrial Direct Contact Criteria (mg/kg)	Site Specific Industrial Volatilization to Indoor Air Criteria (mg/kg)	Site Specific Background (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Ambient Air Criteria	Ratio of Max Conc to Industrial Particulate Inhalation Criteria	Ratio of Max Conc to Industrial Direct Contact Criteria	Ratio of Max Conc to Site Specific Industrial Volatilization to Indoor Air Criteria	
AOI-27	VOC	Trichloroethene	79-01-6	C-B2	12	4	3.40E-02	5.50E-01	9.40E-03	1.10E-02	2.6E+02	2.3E+06	5.0E+02	3.9E+04		2.1E-03	2.4E-07	1.1E-03	1.4E-05	
AOI-27	VOC	Xylenes (total)	1330-20-7	ID	12	1	4.70E-02	4.70E-02	2.00E-02	2.60E-02	5.4E+04	1.3E+08	1.5E+02	1.9E+05		8.7E-07	3.6E-10	3.1E-04	2.5E-07	
AOI-27	SVOC	Benzo(a)anthracene	56-55-3	B2	12	1	6.80E-02	6.80E-02	2.40E-02	3.00E-02			8.0E+01						8.5E-04	
AOI-27	SVOC	Benzo(a)pyrene	50-32-8	B2	12	1	7.30E-02	7.30E-02	1.60E-02	1.90E-02		1.9E+03	8.0E+00					3.8E-05	9.1E-03	
AOI-27	SVOC	Benzo(b)fluoranthene	205-99-2	B2	12	1	1.10E-01	1.10E-01	2.10E-02	2.60E-02			8.0E+01						1.4E-03	
AOI-27	SVOC	Benzo(g,h,i)perylene	191-24-2	D	12	1	4.90E-02	4.90E-02	1.70E-02	2.10E-02		3.5E+05	7.0E+03					1.4E-07	7.0E-06	
AOI-27	SVOC	Benzo(k)fluoranthene	207-08-9	B2	12	1	4.40E-02	4.40E-02	1.70E-02	2.10E-02			8.0E+02						5.5E-05	
AOI-27	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	12	1	7.00E-02	7.00E-02	1.40E-02	1.70E-02		8.9E+05	1.0E+04	4.8E+12				7.9E-08	7.0E-06	1.5E-14
AOI-27	SVOC	Chrysene	218-01-9	B2	12	1	8.60E-02	8.60E-02	2.30E-02	2.80E-02			8.0E+03						1.1E-05	
AOI-27	SVOC	Di-n-butylphthalate	84-74-2	D	12	1	4.10E-02	4.10E-02	2.40E-02	3.00E-02		1.5E+06	7.6E+02	9.7E+10				2.7E-08	5.4E-05	4.2E-13
AOI-27	SVOC	Fluoranthene	206-44-0	D	12	1	1.80E-01	1.80E-01	1.70E-02	2.10E-02	8.9E+05	4.1E+06	1.3E+05				2.0E-07	4.4E-08	1.4E-06	
AOI-27	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	12	1	4.00E-02	4.00E-02	2.00E-02	2.40E-02			8.0E+01						5.0E-04	
AOI-27	SVOC	2-Methylnaphthalene	91-57-6	ID	12	2	4.20E-02	4.30E-02	1.80E-02	2.20E-02			2.6E+04						1.7E-06	
AOI-27	SVOC	Phenanthrene	85-01-8	D	12	1	1.50E-01	1.50E-01	2.20E-02	2.70E-02	1.9E+02	2.9E+03	5.2E+03				7.9E-04	5.2E-05	2.9E-05	
AOI-27	SVOC	Pyrene	129-00-0	D	12	1	1.60E-01	1.60E-01	2.20E-02	2.70E-02	7.8E+05	2.9E+06	8.4E+04				2.1E-07	5.5E-08	1.9E-06	
AOI-27	P/PCB	PCBs (total)	1336-36-3	B2	12	1	2.19E-02	2.19E-02	2.10E-02	2.60E-02	8.1E+02	6.5E+03	1.6E+01	4.0E+05		2.7E-05	3.4E-06	1.4E-03	5.5E-08	
AOI-27	INORG	Aluminum	7429-90-5	D	12	12	1.54E+03	1.43E+04					3.7E+05		7.4E+03				1.9E-02	
AOI-27	INORG	Antimony	7440-36-0		12	4	4.60E-01	4.47E+00	2.40E-01	2.90E-01		5.9E+03	6.7E+02		8.0E-01			6.2E-04	5.5E-03	
AOI-27	INORG	Arsenic	7440-38-2	A	12	12	2.10E+00	9.80E+00				9.1E+02	3.7E+01		6.8E+00			3.3E-03	8.1E-02	
AOI-27	INORG	Barium	7440-39-3	D	12	12	1.30E+01	1.39E+02				1.5E+05	1.3E+05		6.2E+01			5.1E-04	5.9E-04	
AOI-27	INORG	Beryllium	7440-41-7	B1	12	7	8.05E-02	8.40E-01	7.30E-02	8.40E-02		5.9E+02	1.6E+03		3.1E-01			8.9E-04	3.3E-04	
AOI-27	INORG	Cadmium	7440-43-9	B1	12	11	5.30E-02	6.40E-01	1.70E-02	1.70E-02		2.2E+03	2.1E+03		1.4E+00					
AOI-27	INORG	Calcium	7440-70-2		12	12	1.80E+03	8.34E+04												
AOI-27	INORG	Chromium (total)	7440-47-3		12	12	2.90E+00	2.38E+01				2.4E+02	9.2E+03		1.8E+01			2.5E-02	6.4E-04	
AOI-27	INORG	Cobalt	7440-48-4	B1	12	12	2.00E+00	1.51E+01				5.9E+03	9.0E+03		5.8E+00			1.6E-03	1.0E-03	
AOI-27	INORG	Copper	7440-50-8	D	12	12	4.20E+00	1.25E+02				5.9E+04	7.3E+04		5.9E+01			1.1E-03	9.0E-04	
AOI-27	INORG	Iron	7439-89-6	D	12	12	4.54E+03	3.29E+04				5.8E+05		1.5E+04				3.0E-02		
AOI-27	INORG	Lead	7439-92-1	B2	12	12	2.10E+00	7.80E+01				4.4E+04	9.0E+02		6.8E+01			2.3E-04	1.1E-02	
AOI-27	INORG	Magnesium	7439-95-4		12	12	1.88E+03	1.53E+04				2.9E+06	1.0E+06					5.3E-03	1.5E-02	
AOI-27	INORG	Manganese	7439-96-5	D	12	12	7.60E+01	1.03E+03				1.5E+03	9.0E+04		5.2E+02			3.4E-01	5.7E-03	
AOI-27	INORG	Mercury	7439-97-6	D	12	1	3.20E-02	3.20E-02	1.70E-02	2.10E-02	6.2E+01	8.8E+03	5.8E+02	1.3E+04	1.9E-01					
AOI-27	INORG	Nickel	7440-02-0	A	12	12	4.20E+00	3.51E+01				1.6E+04	1.5E+05		1.5E+01			1.2E-03	1.3E-04	
AOI-27	INORG	Potassium	7440-09-7		12	12	2.62E+02	2.02E+03												
AOI-27	INORG	Silver	7440-22-4	D	12	1	4.95E-01	4.95E-01	1.10E-01	1.30E-01	2.9E+03	9.0E+03		1.0E+00						
AOI-27	INORG	Sodium	7440-23-5		12	8	3.80E+01	1.21E+02	4.23E+01	5.02E+01		1.0E+06							1.2E-04	
AOI-27	INORG	Thallium	7440-28-0		12	1	8.75E-01	8.75E-01	6.10E-01	7.50E-01		1.3E+02		9.3E-01						
AOI-27	INORG	Vanadium	7440-62-2		12	12	6.30E+00	3.39E+01				5.5E+03		1.8E+01					2.8E-03	
AOI-27	INORG	Zinc	7440-66-6	D	12	12	1.60E+01	1.95E+02				6.3E+05		9.0E+01					1.7E-04	
AOI-31	VOC	Cyclohexane	110-82-7	ID	3	2	2.00E-02	2.40E-02	7.30E-03	7.30E-03										
AOI-31	VOC	Ethyl Benzene	100-41-4	D	9	2	1.10E-02	1.80E-02	7.60E-03	1.00E-02	2.4E+03	1.3E+07	1.4E+02	1.5E+05		7.5E-06	1.4E-09	1.3E-04	1.2E-07	
AOI-31	VOC	Methyl Acetate	79-20-9		3	2	3.30E-02	4.80E-02	2.90E-02	2.90E-02				2.0E+06					2.4E-08	
AOI-31	VOC	Methylcyclohexane	108-87-2		3	3	1.90E-02	9.20E-02												
AOI-31	VOC	Styrene	100-42-5		3	1	1.30E-02	1.30E-02	8.70E-03	8.80E-03	3.3E+03	6.9E+06	5.2E+02	4.3E+05		3.9E-06	1.9E-09	2.5E-05	3.0E-08	
AOI-31	VOC	Xylenes (total)	1330-20-7	ID	9	1	2.20E-02	2.20E-02	1.00E-02	2.30E-02	5.4E+04	1.3E+08	1.5E+02	1.9E+05		4.1E-07	1.7E-10	1.5E-04	1.2E-07	
AOI-31	SVOC	Anthracene	120-12-7	D	3	1	4.00E-02	4.00E-02	2.10E-02	2.10E-02										

**Table 2-1a: Soil Screening Results for On-Site Borings**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Industrial Soil Volatilization to Ambient Air Criteria (mg/kg)	Industrial Particulate Inhalation Criteria (mg/kg)	Industrial Direct Contact Criteria (mg/kg)	Site Specific Industrial Volatilization to Indoor Air Criteria (mg/kg)	Site Specific Background (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Ambient Air Criteria	Ratio of Max Conc to Industrial Particulate Inhalation Criteria	Ratio of Max Conc to Industrial Direct Contact Criteria	Ratio of Max Conc to Site Specific Industrial Volatilization to Indoor Air Criteria	
AOI-31	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	3	2	6.80E-02	1.40E-01	2.30E-02	2.30E-02			8.0E+01					1.8E-03		
AOI-31	SVOC	2-Methylnaphthalene	91-57-6	ID	3	1	5.90E-02	5.90E-02	1.80E-02	2.10E-02			2.6E+04					2.3E-06		
AOI-31	SVOC	Phenanthrene	85-01-8	D	3	2	1.60E-01	2.10E-01	2.60E-02	2.60E-02	1.9E+02	2.9E+03	5.2E+03			1.1E-03	7.2E-05	4.0E-05		
AOI-31	SVOC	Pyrene	129-00-0	D	3	2	2.10E-01	3.70E-01	2.60E-02	2.60E-02	7.8E+05	2.9E+06	8.4E+04			4.7E-07	1.3E-07	4.4E-06		
AOI-35	INORG	Aluminum	7429-90-5	D	3	3	2.96E+03	1.76E+04					3.7E+05		7.4E+03			2.8E-02		
AOI-35	INORG	Arsenic	7440-38-2	A	3	3	2.30E+00	1.16E+01					9.1E+02	3.7E+01	6.8E+00			5.3E-03	1.3E-01	
AOI-35	INORG	Barium	7440-39-3	D	3	3	1.94E+01	8.44E+01					1.5E+05	1.3E+05	6.2E+01			1.5E-04	1.7E-04	
AOI-35	INORG	Beryllium	7440-41-7	B1	3	2	1.20E-01	8.50E-01	7.70E-02	7.70E-02			5.9E+02	1.6E+03	3.1E-01			9.1E-04	3.3E-04	
AOI-35	INORG	Cadmium	7440-43-9	B1	3	3	4.90E-02	1.80E-01					2.2E+03	2.1E+03	1.4E+00					
AOI-35	INORG	Calcium	7440-70-2		3	3	1.09E+03	2.06E+03												
AOI-35	INORG	Chromium (total)	7440-47-3		3	3	5.10E+00	2.71E+01					2.4E+02	9.2E+03	1.8E+01			3.8E-02	1.0E-03	
AOI-35	INORG	Cobalt	7440-48-4	B1	3	3	2.10E+00	1.01E+01					5.9E+03	9.0E+03	5.8E+00			7.3E-04	4.8E-04	
AOI-35	INORG	Copper	7440-50-8	D	3	3	2.60E+00	2.13E+01					5.9E+04	7.3E+04	5.9E+01					
AOI-35	INORG	Cyanide (total)	57-12-5	D	3	1	1.40E-01	1.40E-01	1.00E-01	1.10E-01			2.5E+02	2.5E+02				5.6E-04	5.6E-04	
AOI-35	INORG	Iron	7439-89-6	D	3	3	5.51E+03	3.42E+04					5.8E+05		1.5E+04				3.2E-02	
AOI-35	INORG	Lead	7439-92-1	B2	3	3	4.70E+00	1.82E+01					4.4E+04	9.0E+02	6.8E+01					
AOI-35	INORG	Magnesium	7439-95-4		3	3	6.55E+02	3.82E+03					2.9E+06	1.0E+06				1.3E-03	3.8E-03	
AOI-35	INORG	Manganese	7439-96-5	D	3	3	5.86E+01	2.77E+02					1.5E+03	9.0E+04	5.2E+02					
AOI-35	INORG	Mercury	7439-97-6	D	3	2	2.10E-02	3.50E-02	1.80E-02	1.80E-02	6.2E+01	8.8E+03	5.8E+02	1.3E+04	1.9E-01					
AOI-35	INORG	Nickel	7440-02-0	A	3	3	4.90E+00	3.07E+01					1.6E+04	1.5E+05	1.5E+01			9.6E-04	1.0E-04	
AOI-35	INORG	Potassium	7440-09-7		3	3	3.27E+02	1.53E+03												
AOI-35	INORG	Selenium	7782-49-2	D	3	3	4.30E-01	2.00E+00					5.9E+04	9.6E+03	7.0E-01			2.2E-05	1.4E-04	
AOI-35	INORG	Sodium	7440-23-5		3	3	4.54E+01	5.07E+02					1.0E+06					5.1E-04	5.1E-04	
AOI-35	INORG	Thallium	7440-28-0		3	1	8.80E-01	8.80E-01	6.60E-01	7.20E-01			1.3E+02		9.3E-01					
AOI-35	INORG	Vanadium	7440-62-2		3	3	9.00E+00	3.81E+01					5.5E+03		1.8E+01			3.6E-03		
AOI-35	INORG	Zinc	7440-66-6	D	3	3	4.67E+01	8.12E+01					6.3E+05		9.0E+01					
AOI-37	VOC	Acetone	67-64-1	ID	3	3	7.80E-02	2.30E-01			1.6E+05	1.7E+08	7.3E+04	1.2E+07			1.4E-06	1.4E-09	3.2E-06	1.9E-08
AOI-37	VOC	1,1-Dichloroethane	75-34-3	C	3	2	1.90E-01	7.10E-01	1.30E-02	1.30E-02	2.5E+03	1.5E+07	8.9E+02	3.8E+04			2.8E-04	4.7E-08	8.0E-04	1.9E-05
AOI-37	VOC	1,1-Dichloroethene	75-35-4	C	3	2	5.30E-02	4.00E-01	9.40E-03	9.40E-03	3.7E+00	7.8E+04	5.7E+02	7.0E+02			1.1E-01	5.1E-06	7.0E-04	5.7E-04
AOI-37	VOC	1,1,1-Trichloroethane	71-55-6	D	3	2	2.40E-01	3.90E+00	1.10E-02	1.10E-02	4.5E+03	2.9E+07	4.6E+02	1.3E+05			8.7E-04	1.3E-07	8.5E-03	3.0E-05
AOI-37	SVOC	Fluoranthene	206-44-0	D	3	1	7.70E-02	7.70E-02	1.90E-02	1.90E-02	8.9E+05	4.1E+06	1.3E+05			8.7E-08	1.9E-08	5.9E-07		
AOI-37	SVOC	Phenanthrene	85-01-8	D	3	1	5.20E-02	5.20E-02	2.50E-02	2.50E-02	1.9E+02	2.9E+03	5.2E+03			2.7E-04	1.8E-05	1.0E-05		
AOI-37	SVOC	Pyrene	129-00-0	D	3	1	4.30E-02	4.30E-02	2.50E-02	2.50E-02	7.8E+05	2.9E+06	8.4E+04			5.5E-08	1.5E-08	5.1E-07		
AOI-45	VOC	Benzene	71-43-2	A	9	1	6.98E-03	6.98E-03	7.50E-03	8.40E-03	4.5E+01	4.7E+05	4.0E+02	4.1E+02			1.6E-04	1.5E-08	1.7E-05	
AOI-45	VOC	Cyclohexane	110-82-7	ID	9	4	2.58E-02	9.30E-02	6.70E-03	7.50E-03										
AOI-45	VOC	cis-1,2-Dichloroethene	156-59-2	D	9	1	6.00E-02	6.00E-02	8.50E-03	9.50E-03	2.1E+02	1.0E+06	6.4E+02	1.1E+05			2.9E-04	6.0E-08	9.4E-05	5.6E-07
AOI-45	VOC	trans-1,2-Dichloroethene	156-60-5		9	1	6.80E-02	6.80E-02	1.10E-02	1.20E-02	3.3E+02	2.1E+06	1.4E+03	6.1E+04			2.1E-04	3.2E-08	4.9E-05	1.1E-06
AOI-45	VOC	Ethyl Benzene	100-41-4	D	9	3	5.55E-03	2.90E-02	7.10E-03	7.90E-03	2.4E+03	1.3E+07	1.4E+02	1.5E+05			1.2E-05	2.2E-09	2.1E-04	1.9E-07
AOI-45	VOC	Methyl Acetate	79-20-9		9	1	6.18E-02	6.18E-02	2.60E-02	2.90E-02			2.0E+06						3.0E-08	
AOI-45	VOC	Methylcyclohexane	108-87-2																	

**Table 2-1a: Soil Screening Results for On-Site Borings**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Industrial Soil Volatilization to Ambient Air Criteria (mg/kg)	Industrial Particulate Inhalation Criteria (mg/kg)	Industrial Direct Contact Criteria (mg/kg)	Site Specific Industrial Volatilization to Indoor Air Criteria (mg/kg)	Site Specific Background (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Ambient Air Criteria	Ratio of Max Conc to Industrial Particulate Inhalation Criteria	Ratio of Max Conc to Industrial Direct Contact Criteria	Ratio of Max Conc to Site Specific Industrial Volatilization to Indoor Air Criteria		
AOI-45	SVOC	Carbazole	86-74-8	B2	15	4	1.35E-01	3.20E-01	2.10E-02	2.30E-01			2.4E+03					1.3E-04			
AOI-45	SVOC	Chrysene	218-01-9	B2	15	6	2.10E-01	4.80E+00	2.40E-02	2.70E-01			8.0E+03					6.0E-04			
AOI-45	SVOC	Dibenz(a,h)anthracene	53-70-3	B2	15	5	1.30E-01	1.80E+00	2.00E-02	2.20E-01			8.0E+00					2.3E-01			
AOI-45	SVOC	Dibenzofuran	132-64-9	D	15	1	1.00E-01	1.00E-01	1.90E-02	2.10E-01											
AOI-45	SVOC	Fluoranthene	206-44-0	D	15	5	2.60E-01	3.90E+00	1.80E-02	1.90E-01	8.9E+05	4.1E+06	1.3E+05			4.4E-06	9.5E-07	3.0E-05			
AOI-45	SVOC	Fluorene	86-73-7	D	15	4	1.05E-01	2.00E-01	1.70E-02	1.80E-01	1.5E+05	4.1E+06	8.7E+04			1.3E-06	4.9E-08	2.3E-06			
AOI-45	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	15	5	3.60E-01	5.20E+00	2.10E-02	2.30E-01			8.0E+01					6.5E-02			
AOI-45	SVOC	2-Methylnaphthalene	91-57-6	ID	15	4	1.05E-01	1.70E-01	1.90E-02	2.10E-01			2.6E+04					6.5E-06			
AOI-45	SVOC	Naphthalene	91-20-3	C	15	4	1.35E-01	2.00E-01	1.90E-02	2.10E-01	3.5E+02	8.8E+04	5.2E+04	1.4E+06		5.7E-04	2.3E-06	3.8E-06	1.4E-07		
AOI-45	SVOC	Phenanthrene	85-01-8	D	15	7	1.10E-01	1.70E+00	2.30E-02	2.60E-01	1.9E+02	2.9E+03	5.2E+03			8.9E-03	5.9E-04	3.3E-04			
AOI-45	SVOC	Pyrene	129-00-0	D	15	5	2.10E-01	4.40E+00	2.30E-02	2.60E-01	7.8E+05	2.9E+06	8.4E+04			5.6E-06	1.5E-06	5.2E-05			
AOI-45	P/PCB	PCBs (total)	1336-36-3	B2	9	1	6.93E-02	6.93E-02	2.20E-02	2.30E-02	8.1E+02	6.5E+03	1.6E+01	4.0E+05		8.6E-05	1.1E-05	4.3E-03	1.8E-07		
AOI-45	INORG	Aluminum	7429-90-5	D	9	9	3.09E+03	8.92E+03					3.7E+05		7.4E+03			4.1E-03			
AOI-45	INORG	Antimony	7440-36-0		9	7	2.70E-01	4.20E-01	2.60E-01	2.60E-01		5.9E+03	6.7E+02		8.0E-01						
AOI-45	INORG	Arsenic	7440-38-2	A	9	9	2.30E+00	1.06E+01					9.1E+02	3.7E+01		6.8E+00		4.2E-03	1.0E-01		
AOI-45	INORG	Barium	7440-39-3	D	9	9	9.00E+00	6.61E+01					1.5E+05	1.3E+05		6.2E+01		2.7E-05	3.1E-05		
AOI-45	INORG	Beryllium	7440-41-7	B1	9	6	1.40E-01	3.70E-01	7.40E-02	7.50E-02			5.9E+02	1.6E+03		3.1E-01		9.4E-05	3.5E-05		
AOI-45	INORG	Cadmium	7440-43-9	B1	9	3	1.45E-01	2.20E-01	1.80E-02	1.90E-02		2.2E+03	2.1E+03		1.4E+00						
AOI-45	INORG	Calcium	7440-70-2		9	9	5.24E+02	5.53E+04													
AOI-45	INORG	Chromium (total)	7440-47-3		9	9	4.90E+00	1.44E+01					2.4E+02	9.2E+03		1.8E+01					
AOI-45	INORG	Cobalt	7440-48-4	B1	9	9	1.50E+00	8.10E+00					5.9E+03	9.0E+03		5.8E+00		3.9E-04	2.5E-04		
AOI-45	INORG	Copper	7440-50-8	D	9	9	2.60E+00	1.47E+01					5.9E+04	7.3E+04		5.9E+01					
AOI-45	INORG	Cyanide (total)	57-12-5	D	9	1	1.70E-01	1.70E-01	9.60E-02	1.10E-01			2.5E+02	2.5E+02				6.8E-04	6.8E-04		
AOI-45	INORG	Iron	7439-89-6	D	9	9	5.91E+03	2.01E+04							5.8E+05		1.5E+04		8.0E-03		
AOI-45	INORG	Lead	7439-92-1	B2	9	9	4.20E+00	4.80E+01					4.4E+04	9.0E+02		6.8E+01					
AOI-45	INORG	Magnesium	7439-95-4		9	9	5.82E+02	1.98E+04					2.9E+06	1.0E+06				6.8E-03	2.0E-02		
AOI-45	INORG	Manganese	7439-96-5	D	9	9	7.92E+01	4.21E+02					1.5E+03	9.0E+04		5.2E+02					
AOI-45	INORG	Mercury	7439-97-6	D	9	4	3.90E-02	9.50E-02	1.70E-02	1.90E-02	6.2E+01	8.8E+03	5.8E+02	1.3E+04	1.9E-01						
AOI-45	INORG	Nickel	7440-02-0	A	9	9	4.70E+00	2.12E+01					1.6E+04	1.5E+05		1.5E+01		3.7E-04	3.9E-05		
AOI-45	INORG	Potassium	7440-09-7		9	9	2.21E+02	1.31E+03													
AOI-45	INORG	Selenium	7782-49-2	D	9	2	3.20E-01	4.20E-01	3.40E-01	3.80E-01		5.9E+04	9.6E+03		7.0E-01						
AOI-45	INORG	Sodium	7440-23-5		9	9	1.07E+02	2.45E+02							1.0E+06				2.5E-04		
AOI-45	INORG	Vanadium	7440-62-2		9	9	7.00E+00	2.29E+01							5.5E+03		1.8E+01		8.4E-04		
AOI-45	INORG	Zinc	7440-66-6	D	9	9	1.70E+01	8.82E+01							6.3E+05		9.0E+01				
AOI-48	VOC	Acetone	67-64-1	ID	8	1	2.20E-01	2.20E-01	5.30E-02	2.20E-01	1.6E+05	1.7E+08	7.3E+04	1.2E+07		1.4E-06	1.3E-09	3.0E-06	1.8E-08		
AOI-48	VOC	Benzene	71-43-2	A	8	3	1.20E-02	1.90E-01	7.60E-03	1.70E-02	4.5E+01	4.7E+05	4.0E+02	4.1E+02		4.2E-03	4.0E-07	4.8E-04	4.6E-04		
AOI-48	VOC	Cumene	98-82-8	D	8	3	1.70E-02	1.10E+00	8.10E-03	1.10E-02	2.0E+03	2.6E+06	3.9E+02	7.3E+03		5.5E-04	4.2E-07	2.8E-03	1.5E-04		
AOI-48	VOC	Cyclohexane	110-82-7	ID	8	3	5.10E-02	3.40E-01	6.90E-03	8.70E-03											
AOI-48	VOC	1,2-Dichlorobenzene	95-50-1	D	8	1	4.70E-01	4.70E-01	7.60E-03	3.20E-02	4.6E+04	4.4E+07	2.1E+02	3.5E+05		1.0E-05	1.1E-08	2.2E-03	1.3E-06		
AOI-48	VOC	1,4-Dichlorobenzene	106-46-7	C-B2	8	1	8.30E-02	8.30E-02	9.50E-03	4.00E-02	2.6E+02	5.7E+05	1.9E+03	8.2E+05		3.2E-0					

**Table 2-1a: Soil Screening Results for On-Site Borings**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Industrial Soil Volatilization to Ambient Air Criteria (mg/kg)	Industrial Particulate Inhalation Criteria (mg/kg)	Industrial Direct Contact Criteria (mg/kg)	Site Specific Industrial Volatilization to Indoor Air Criteria (mg/kg)	Site Specific Background (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Ambient Air Criteria	Ratio of Max Conc to Industrial Particulate Inhalation Criteria	Ratio of Max Conc to Industrial Direct Contact Criteria	Ratio of Max Conc to Site Specific Industrial Volatilization to Indoor Air Criteria	
AOI-48	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	8	1	1.30E-01	1.30E-01	1.40E-02	1.40E+00		8.9E+05	1.0E+04	4.8E+12			1.5E-07	1.3E-05	2.7E-14	
AOI-48	SVOC	Carbazole	86-74-8	B2	8	1	1.50E-01	1.50E-01	2.10E-02	1.40E+00		2.4E+03						6.3E-05		
AOI-48	SVOC	Chrysene	218-01-9	B2	8	4	4.90E-02	6.70E-01	2.40E-02	1.20E+00		8.0E+03						8.4E-05		
AOI-48	SVOC	Dibenz(a,h)anthracene	53-70-3	B2	8	1	1.10E-01	1.10E-01	2.00E-02	1.30E+00		8.0E+00						1.4E-02		
AOI-48	SVOC	Dibenzofuran	132-64-9	D	8	1	8.50E-02	8.50E-02	1.90E-02	1.30E+00										
AOI-48	SVOC	Di-n-butylphthalate	84-74-2	D	8	2	1.40E-01	4.00E-01	2.50E-02	4.00E+00		1.5E+06	7.6E+02	9.7E+10			2.7E-07	5.3E-04	4.1E-12	
AOI-48	SVOC	Fluoranthene	206-44-0	D	8	4	6.20E-02	1.50E+00	1.80E-02	1.50E+00	8.9E+05	4.1E+06	1.3E+05			1.7E-06	3.7E-07	1.2E-05		
AOI-48	SVOC	Fluorene	86-73-7	D	8	1	1.50E-01	1.50E-01	1.70E-02	1.30E+00	1.5E+05	4.1E+06	8.7E+04			1.0E-06	3.7E-08	1.7E-06		
AOI-48	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	8	2	5.00E-02	3.50E-01	2.10E-02	1.80E+00		8.0E+01						4.4E-03		
AOI-48	SVOC	2-Methylnaphthalene	91-57-6	ID	8	2	9.50E-02	6.10E+00	1.90E-02	5.60E-02		2.6E+04						2.3E-04		
AOI-48	SVOC	Naphthalene	91-20-3	C	8	3	6.00E-02	4.10E+00	1.90E-02	2.00E-02	3.5E+02	8.8E+04	5.2E+04	1.4E+06		1.2E-02	4.7E-05	7.9E-05	2.9E-06	
AOI-48	SVOC	Phenanthrene	85-01-8	D	8	3	5.10E-02	1.30E+00	2.30E-02	1.40E+00	1.9E+02	2.9E+03	5.2E+03			6.8E-03	4.5E-04	2.5E-04		
AOI-48	SVOC	Pyrene	129-00-0	D	8	1	1.40E+00	1.40E+00	2.30E-02	1.30E+00	7.8E+05	2.9E+06	8.4E+04			1.8E-06	4.8E-07	1.7E-05		
AOI-48	P/PCB	PCBs (total)	1336-36-3	B2	2	1	4.61E-02	4.61E-02	2.30E-02	2.30E-02	8.1E+02	6.5E+03	1.6E+01	4.0E+05		5.7E-05	7.1E-06	2.9E-03	1.2E-07	
AOI-48	INORG	Aluminum	7429-90-5	D	5	5	3.27E+03	9.89E+03				3.7E+05			7.4E+03			6.8E-03		
AOI-48	INORG	Arsenic	7440-38-2	A	5	5	1.90E+00	8.10E+00				9.1E+02	3.7E+01		6.8E+00			1.4E-03	3.5E-02	
AOI-48	INORG	Barium	7440-39-3	D	5	5	1.90E+01	7.42E+01				1.5E+05	1.3E+05		6.2E+01			8.1E-05	9.4E-05	
AOI-48	INORG	Beryllium	7440-41-7	B1	5	5	2.20E-01	4.50E-01				5.9E+02	1.6E+03		3.1E-01			2.3E-04	8.5E-05	
AOI-48	INORG	Cadmium	7440-43-9	B1	5	3	1.70E-02	2.90E+00	1.80E-02	1.90E-02		2.2E+03	2.1E+03		1.4E+00			7.0E-04	7.4E-04	
AOI-48	INORG	Calcium	7440-70-2		5	5	1.39E+03	3.91E+04												
AOI-48	INORG	Chromium (total)	7440-47-3		5	5	3.60E+00	1.75E+01				2.4E+02	9.2E+03		1.8E+01					
AOI-48	INORG	Cobalt	7440-48-4	B1	5	5	1.60E+00	6.60E+00				5.9E+03	9.0E+03		5.8E+00			1.3E-04	8.6E-05	
AOI-48	INORG	Copper	7440-50-8	D	5	5	2.80E+00	1.00E+02				5.9E+04	7.3E+04		5.9E+01			6.9E-04	5.6E-04	
AOI-48	INORG	Iron	7439-89-6	D	5	2	1.36E+04	2.02E+04	3.90E+00	4.30E+00				5.8E+05			1.5E+04			
AOI-48	INORG	Lead	7439-92-1	B2	5	5	6.80E+00	3.77E+01				4.4E+04	9.0E+02		6.8E+01					
AOI-48	INORG	Magnesium	7439-95-4		5	5	4.56E+02	1.64E+04				2.9E+06	1.0E+06					5.7E-03	1.6E-02	
AOI-48	INORG	Manganese	7439-96-5	D	5	5	7.20E+01	5.74E+02				1.5E+03	9.0E+04		5.2E+02			3.5E-02	5.9E-04	
AOI-48	INORG	Mercury	7439-97-6	D	5	3	1.90E-02	3.80E-01	1.80E-02	1.90E-02	6.2E+01	8.8E+03	5.8E+02	1.3E+04	1.9E-01		3.0E-03	2.1E-05	3.3E-04	1.5E-05
AOI-48	INORG	Nickel	7440-02-0	A	5	5	3.50E+00	1.97E+01				1.6E+04	1.5E+05		1.5E+01			2.7E-04	2.9E-05	
AOI-48	INORG	Potassium	7440-09-7		5	5	2.86E+02	1.03E+03												
AOI-48	INORG	Selenium	7782-49-2	D	5	1	4.30E-01	4.30E-01	3.40E-01	4.10E-01		5.9E+04	9.6E+03		7.0E-01					
AOI-48	INORG	Sodium	7440-23-5		5	4	6.02E+01	2.15E+02	6.59E+01	6.59E+01				1.0E+06				2.2E-04		
AOI-48	INORG	Vanadium	7440-62-2		5	5	6.00E+00	2.25E+01						5.5E+03			1.8E+01		7.6E-04	
AOI-48	INORG	Zinc	7440-66-6	D	5	5	1.16E+01	1.88E+03						6.3E+05			9.0E+01		2.8E-03	
AOI-48 (NW)	VOC	Acetone	67-64-1	ID	40	2	7.10E-01	7.70E-01	5.50E-02	3.80E-01	1.6E+05	1.7E+08	7.3E+04	1.2E+07		4.8E-06	4.5E-09	1.1E-05	6.2E-08	
AOI-48 (NW)	VOC	Cyclohexane	110-82-7	ID	20	1	1.00E-02	1.00E-02	7.10E-03	1.40E-02										
AOI-48 (NW)	VOC	1,4-Dichlorobenzene	106-46-7	C	40	1	2.80E-02	2.80E-02	9.80E-03	8.80E-02	2.6E+02	5.7E+05	1.9E+03	8.2E+05		1.1E-04	4.9E-08	1.5E-05	3.4E-08	
AOI-48 (NW)	VOC	Methyl Acetate	79-20-9		20	5	9.30E-02	4.70E-01	2.70E-02	7.30E-02				2.0E+06					2.3E-07	
AOI-48 (NW)	VOC	Methylcyclohexane	108-87-2		20	1	2.80E-02	2.80E-02	1.00E-02	2.60E-02										
AOI-48 (NW)	VOC	Methylene Chloride	75-09-2	B2	40	3	4.50E-02	8.20E-02	1.80E-02	1.90E-01	7.0E+02	8.3E+06	2.3E+03	1.5E+04	</td					

**Table 2-1a: Soil Screening Results for On-Site Borings**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Industrial Soil Volatilization to Ambient Air Criteria (mg/kg)	Industrial Particulate Inhalation Criteria (mg/kg)	Industrial Direct Contact Criteria (mg/kg)	Site Specific Industrial Volatilization to Indoor Air Criteria (mg/kg)	Site Specific Background (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Ambient Air Criteria	Ratio of Max Conc to Industrial Particulate Inhalation Criteria	Ratio of Max Conc to Industrial Direct Contact Criteria	Ratio of Max Conc to Site Specific Industrial Volatilization to Indoor Air Criteria			
AOI-48 (NW)	SVOC	Pyrene	129-00-0	D	14	4	7.10E-02	4.00E-01	5.40E-02	6.80E-02	7.8E+05	2.9E+06	8.4E+04			5.1E-07	1.4E-07	4.8E-06				
AOI-48 (NW)	P/PCB	PCBs (total)	1336-36-3	B2	14	4	3.67E-02	4.13E-01	2.10E-02	2.70E-02	8.1E+02	6.5E+03	1.6E+01	4.0E+05		5.1E-04	6.3E-05	2.6E-02	1.0E-06			
AOI-48 (NW)	INORG	Aluminum	7429-90-5	D	14	14	1.10E+03	1.27E+04				3.7E+05			7.4E+03			1.4E-02				
AOI-48 (NW)	INORG	Antimony	7440-36-0		14	7	2.60E-01	8.20E-01	3.10E-01	6.00E-01		5.9E+03	6.7E+02		8.0E-01		2.9E-06	2.6E-05				
AOI-48 (NW)	INORG	Arsenic	7440-38-2	A	14	14	1.40E+00	8.70E+00				9.1E+02	3.7E+01		6.8E+00		2.1E-03	5.1E-02				
AOI-48 (NW)	INORG	Barium	7440-39-3	D	14	14	4.10E+00	9.49E+01				1.5E+05	1.3E+05		6.2E+01		2.2E-04	2.5E-04				
AOI-48 (NW)	INORG	Beryllium	7440-41-7	B1	14	8	6.90E-02	6.00E-01	4.90E-02	9.00E-02		5.9E+02	1.6E+03		3.1E-01		4.8E-04	1.8E-04				
AOI-48 (NW)	INORG	Cadmium	7440-43-9	B1	14	7	5.50E-02	4.20E-01	4.50E-02	5.50E-02		2.2E+03	2.1E+03		1.4E+00							
AOI-48 (NW)	INORG	Calcium	7440-70-2		14	14	4.04E+02	4.93E+04														
AOI-48 (NW)	INORG	Chromium (total)	7440-47-3		14	14	3.30E+00	2.31E+01				2.4E+02	9.2E+03		1.8E+01		2.2E-02	5.7E-04				
AOI-48 (NW)	INORG	Cobalt	7440-48-4	B1	14	14	1.30E+00	1.02E+01				5.9E+03	9.0E+03		5.8E+00		7.4E-04	4.9E-04				
AOI-48 (NW)	INORG	Copper	7440-50-8	D	14	14	2.80E+00	3.30E+01				5.9E+04	7.3E+04		5.9E+01							
AOI-48 (NW)	INORG	Iron	7439-89-6	D	14	14	3.90E+03	2.38E+04				5.8E+05			1.5E+04			1.4E-02				
AOI-48 (NW)	INORG	Lead	7439-92-1	B2	14	14	2.20E+00	1.22E+02				4.4E+04	9.0E+02		6.8E+01		1.2E-03	6.0E-02				
AOI-48 (NW)	INORG	Magnesium	7439-95-4		14	14	5.61E+02	1.99E+04				2.9E+06	1.0E+06				6.9E-03	2.0E-02				
AOI-48 (NW)	INORG	Manganese	7439-96-5	D	14	14	6.80E+01	8.84E+02				1.5E+03	9.0E+04		5.2E+02		2.4E-01	4.0E-03				
AOI-48 (NW)	INORG	Mercury	7439-97-6	D	14	9	1.20E-02	1.10E-01	8.90E-03	2.10E-02	6.2E+01	8.8E+03	5.8E+02	1.3E+04	1.9E-01							
AOI-48 (NW)	INORG	Nickel	7440-02-0	A	14	14	3.20E+00	2.74E+01				1.6E+04	1.5E+05		1.5E+01		7.5E-04	8.1E-05				
AOI-48 (NW)	INORG	Potassium	7440-09-7		14	14	1.78E+02	2.11E+03														
AOI-48 (NW)	INORG	Selenium	7782-49-2	D	14	1	3.80E-01	3.80E-01	3.30E-01	4.10E-01		5.9E+04	9.6E+03		7.0E-01							
AOI-48 (NW)	INORG	Silver	7440-22-4	D	14	1	3.20E-01	3.20E-01	1.30E-01	1.90E-01		2.9E+03	9.0E+03		1.0E+00							
AOI-48 (NW)	INORG	Sodium	7440-23-5		14	9	5.27E+01	2.68E+02	5.55E+01	6.17E+01			1.0E+06					2.7E-04				
AOI-48 (NW)	INORG	Thallium	7440-28-0		14	11	6.40E-01	1.50E+00	6.00E-01	6.20E-01			1.3E+02			9.3E-01		4.4E-03				
AOI-48 (NW)	INORG	Vanadium	7440-62-2		14	14	5.00E+00	3.33E+01					5.5E+03			1.8E+01		2.7E-03				
AOI-48 (NW)	INORG	Zinc	7440-66-6	D	14	14	1.27E+01	1.25E+02					6.3E+05			9.0E+01		5.6E-05				
AOI-48 (SE)	VOC	cis-1,2-Dichloroethene	156-59-2	D	14	2	1.20E-01	1.49E-01	9.40E-03	4.20E-02	2.1E+02	1.0E+06	6.4E+02	1.1E+05		7.1E-04	1.5E-07	2.3E-04	1.4E-06			
AOI-48 (SE)	VOC	Ethyl Benzene	100-41-4	D	14	2	1.00E-02	4.10E-02	8.40E-03	4.20E-02	2.4E+03	1.3E+07	1.4E+02	1.5E+05		1.7E-05	3.2E-09	2.9E-04	2.7E-07			
AOI-48 (SE)	VOC	Methyl Acetate	79-20-9		2	1	1.00E-01	1.00E-01	3.10E-02	3.10E-02				2.0E+06					4.9E-08			
AOI-48 (SE)	VOC	Methylcyclohexane	108-87-2		2	1	4.20E-02	4.20E-02	1.10E-02	1.10E-02												
AOI-48 (SE)	VOC	Toluene	108-88-3	D	14	2	4.00E-02	1.30E-01	7.20E-03	8.50E-02	3.3E+03	1.2E+07	2.5E+02	8.7E+04		3.9E-05	1.1E-08	5.2E-04	1.5E-06			
AOI-48 (SE)	VOC	Trichloroethene	79-01-6	C-B2	14	4	2.00E-02	3.50E-01	3.60E-02	4.20E-02	2.6E+02	2.3E+06	5.0E+02	3.9E+04		1.3E-03	1.5E-07	7.0E-04	9.0E-06			
AOI-48 (SE)	VOC	1,2,4-Trimethylbenzene	95-63-6		12	1	9.00E-02	9.00E-02	7.20E-02	8.50E-02	2.5E+04	3.6E+07	1.1E+02			3.6E-06	2.5E-09	8.2E-04				
AOI-48 (SE)	VOC	Vinyl Chloride	75-01-4	A	14	1	7.35E-02	7.35E-02	1.30E-02	8.50E-02	2.9E+01	8.9E+05	3.4E+01	6.1E+01		2.5E-03	8.3E-08	2.2E-03	1.2E-03			
AOI-48 (SE)	VOC	Xylenes (total)	1330-20-7	ID	14	2	5.60E-02	2.40E-01	2.40E-02	8.50E-02	5.4E+04	1.3E+08	1.5E+02	1.9E+05		4.4E-06	1.8E-09	1.6E-03	1.3E-06			
AOI-48 (SE)	SVOC	2-Methylnaphthalene	91-57-6	ID	12	2	1.60E-01	2.60E-01	1.50E-01	1.80E-01			2.6E+04					1.0E-05				
AOI-48(SE)/Blg 4111	VOC	Carbon Tetrachloride	56-23-5	B2	5	2	5.65E-02	1.20E-01	1.60E-02	4.90E-02	1.2E+01	1.7E+05	3.9E+02	7.2E+02		1.0E-02	7.1E-07	3.1E-04	1.7E-04			
AOI-48(SE)/Blg 4111	VOC	Chloroform	67-66-3	B2	5	4	1.35E-02	6.00E-02	1.60E-02	1.60E-02	1.5E+02	1.6E+06	1.5E+03	1.5E+03		4.0E-04	3.8E-08	4.0E-05	4.0E-05			
AOI-48(SE)/Blg 4111</																						

**Table 2-1a: Soil Screening Results for On-Site Borings**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Industrial Soil Volatilization to Ambient Air Criteria (mg/kg)	Industrial Particulate Inhalation Criteria (mg/kg)	Industrial Direct Contact Criteria (mg/kg)	Site Specific Industrial Volatilization to Indoor Air Criteria (mg/kg)	Site Specific Background (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Ambient Air Criteria	Ratio of Max Conc to Industrial Particulate Inhalation Criteria	Ratio of Max Conc to Industrial Direct Contact Criteria	Ratio of Max Conc to Site Specific Industrial Volatilization to Indoor Air Criteria	
AOI-49	VOC	1,1-Dichloroethene	75-35-4	C	13	3	1.70E-01	3.90E+00	9.00E-03	1.10E-01	3.7E+00	7.8E+04	5.7E+02	7.0E+02		<b>1.1E+00</b>	5.0E-05	6.8E-03	5.6E-03	
AOI-49	VOC	cis-1,2-Dichloroethene	156-59-2	D	13	2	1.33E-02	1.80E+00	8.90E-03	1.10E-01	2.1E+02	1.0E+06	6.4E+02	1.1E+05		8.6E-03	1.8E-06	2.8E-03	1.7E-05	
AOI-49	VOC	trans-1,2-Dichloroethene	156-60-5		13	1	1.10E-01	1.10E-01	1.10E-02	1.40E-01	3.3E+02	2.1E+06	1.4E+03	6.1E+04		3.3E-04	5.2E-08	7.9E-05	1.8E-06	
AOI-49	VOC	Ethyl Benzene	100-41-4	D	13	4	3.50E-02	5.25E-01	7.40E-03	9.30E-02	2.4E+03	1.3E+07	1.4E+02	1.5E+05		2.2E-04	4.0E-08	3.8E-03	3.4E-06	
AOI-49	VOC	Methyl Acetate	79-20-9		13	3	5.20E-02	3.50E-01	2.70E-02	3.40E-01				2.0E+06					1.7E-07	
AOI-49	VOC	Methylcyclohexane	108-87-2		13	6	2.00E-02	1.90E+00	1.00E-02	1.30E-01										
AOI-49	VOC	Methylene Chloride	75-09-2	B2	13	1	7.90E-01	7.90E-01	1.80E-02	2.30E-01	7.0E+02	8.3E+06	2.3E+03	1.5E+04		1.1E-03	9.5E-08	3.4E-04	5.4E-05	
AOI-49	VOC	Tetrachloroethene	127-18-4	C-B2	13	2	3.10E-02	2.50E-01	1.30E-02	1.60E-01	6.0E+02	6.8E+06	8.8E+01	1.4E+04		4.2E-04	3.7E-08	2.8E-03	1.8E-05	
AOI-49	VOC	Toluene	108-88-3	D	13	4	3.00E-02	2.00E+00	6.40E-03	8.00E-02	3.3E+03	1.2E+07	2.5E+02	8.7E+04		6.1E-04	1.7E-07	8.0E-03	2.3E-05	
AOI-49	VOC	1,1,1-Trichloroethane	71-55-6	D	13	5	2.40E-02	3.70E+01	1.00E-02	2.10E-02	4.5E+03	2.9E+07	4.6E+02	1.3E+05		8.2E-03	1.3E-06	8.0E-02	2.8E-04	
AOI-49	VOC	1,1,2-Trichloroethane	79-00-5	C	13	2	1.10E-01	3.70E-01	9.00E-03	1.10E-01	5.7E+01	2.5E+05	8.4E+02	3.0E+04		6.5E-03	1.5E-06	4.4E-04	1.2E-05	
AOI-49	VOC	Trichloroethene	79-01-6	C-B2	13	5	1.20E-02	3.30E+00	9.90E-03	1.20E-01	2.6E+02	2.3E+06	5.0E+02	3.9E+04		1.3E-02	1.4E-06	6.6E-03	8.5E-05	
AOI-49	VOC	Xylenes (total)	1330-20-7	ID	13	5	1.01E-01	2.20E+00	2.20E-02	2.70E-01	5.4E+04	1.3E+08	1.5E+02	1.9E+05		4.1E-05	1.7E-08	1.5E-02	1.2E-05	
AOI-49	SVOC	2-Methylnaphthalene	91-57-6	ID	2	1	1.10E-01	1.10E-01	5.60E-02	5.60E-02				2.6E+04					4.2E-06	
AOI-49	SVOC	Naphthalene	91-20-3	C	2	1	1.20E-01	1.20E-01	5.70E-02	5.70E-02	3.5E+02	8.8E+04	5.2E+04	1.4E+06		3.4E-04	1.4E-06	2.3E-06	8.5E-08	
AOI-49	SVOC	Phenanthrene	85-01-8	D	2	1	6.20E-02	6.20E-02	6.00E-02	6.00E-02	1.9E+02	2.9E+03	5.2E+03			3.3E-04	2.1E-05	1.2E-05		
AOI-49	INORG	Aluminum	7429-90-5	D	2	2	2.42E+03	7.57E+03						3.7E+05		7.4E+03			4.9E-04	
AOI-49	INORG	Arsenic	7440-38-2	A	2	2	1.10E+00	4.20E+00				9.1E+02	3.7E+01		6.8E+00					
AOI-49	INORG	Barium	7440-39-3	D	2	2	1.71E+01	6.01E+01				1.5E+05	1.3E+05		6.2E+01					
AOI-49	INORG	Beryllium	7440-41-7	B1	2	1	2.60E-01	2.60E-01	7.30E-02	7.30E-02		5.9E+02	1.6E+03		3.1E-01					
AOI-49	INORG	Cadmium	7440-43-9	B1	2	2	3.30E-02	1.50E-01				2.2E+03	2.1E+03		1.4E+00					
AOI-49	INORG	Calcium	7440-70-2		2	2	1.02E+03	6.13E+04												
AOI-49	INORG	Chromium III	16065-83-1	D	2	2	2.00E+00	1.32E+01				1.5E+05	1.0E+06				8.8E-05	1.3E-05		
AOI-49	INORG	Chromium VI	18540-29-9	A	2	1	9.00E-01	9.00E-01	2.30E-01	2.30E-01		2.4E+02	9.2E+03				3.8E-03	9.8E-05		
AOI-49	INORG	Cobalt	7440-48-4	B1	2	2	1.20E+00	5.80E+00				5.9E+03	9.0E+03		5.8E+00					
AOI-49	INORG	Copper	7440-50-8	D	2	2	2.90E+00	1.11E+01				5.9E+04	7.3E+04		5.9E+01					
AOI-49	INORG	Iron	7439-89-6	D	2	2	2.94E+03	1.46E+04						5.8E+05		1.5E+04				
AOI-49	INORG	Lead	7439-92-1	B2	2	2	6.80E+00	8.20E+00				4.4E+04	9.0E+02		6.8E+01					
AOI-49	INORG	Magnesium	7439-95-4		2	2	5.39E+02	1.88E+04				2.9E+06	1.0E+06				6.5E-03	1.9E-02		
AOI-49	INORG	Manganese	7439-96-5	D	2	2	3.99E+01	3.00E+02				1.5E+03	9.0E+04		5.2E+02					
AOI-49	INORG	Nickel	7440-02-0	A	2	2	2.40E+00	1.49E+01				1.6E+04	1.5E+05		1.5E+01					
AOI-49	INORG	Potassium	7440-09-7		2	2	3.90E+02	1.05E+03												
AOI-49	INORG	Sodium	7440-23-5		2	2	8.59E+01	1.05E+02						1.0E+06				1.1E-04		
AOI-49	INORG	Thallium	7440-28-0		2	1	1.70E+00	1.70E+00	6.20E-01	6.20E-01				1.3E+02		9.3E-01		5.9E-03		
AOI-49	INORG	Vanadium	7440-62-2		2	2	5.70E+00	1.91E+01						5.5E+03		1.8E+01		1.5E-04		
AOI-49	INORG	Zinc	7440-66-6	D	2	2	9.40E+00	4.12E+01						6.3E+05		9.0E+01				
AOI-50	VOC	Acetone	67-64-1	ID	17	2	1.00E-01	3.65E-01	5.30E-02	1.10E-01	1.6E+05	1.7E+08	7.3E+04	1.2E+07		2.3E-06	2.1E-09	5.0E-06	2.9E-08	
AOI-50	VOC	Benzene	71-43-2	A	17	3	9.60E-03	4.80E-02	7.60E-03	1.60E-02	4.5E+01	4.7E+05	4.0E+02	4.1E+02		1.1E-03	1.0E-07	1.2E-04	1.2E-04	
AOI-50	VOC	Carbon Tetrachloride	56-23-5	B2	17	1	3.60E-02	3.60E-02	9.45E-03	2.40E-02	1.2E+01	1.7E+05	3.9E+02	7.2E+02		3.0E-03				

**Table 2-1a: Soil Screening Results for On-Site Borings**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Industrial Soil Volatilization to Ambient Air Criteria (mg/kg)	Industrial Particulate Inhalation Criteria (mg/kg)	Industrial Direct Contact Criteria (mg/kg)	Site Specific Industrial Volatilization to Indoor Air Criteria (mg/kg)	Site Specific Background (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Ambient Air Criteria	Ratio of Max Conc to Industrial Particulate Inhalation Criteria	Ratio of Max Conc to Industrial Direct Contact Criteria	Ratio of Max Conc to Site Specific Industrial Volatilization to Indoor Air Criteria		
AOI-50	VOC	1,1,1-Trichloroethane	71-55-6	D	17	8	9.25E-03	9.60E-01	9.35E-03	1.50E-02	4.5E+03	2.9E+07	4.6E+02	1.3E+05		2.1E-04	3.3E-08	2.1E-03	7.4E-06		
AOI-50	VOC	Trichloroethene	79-01-6	C-B2	17	9	1.10E-02	8.90E-01	9.60E-03	1.60E-02	2.6E+02	2.3E+06	5.0E+02	3.9E+04		3.4E-03	3.9E-07	1.8E-03	2.3E-05		
AOI-50	VOC	Vinyl Chloride	75-01-4	A	17	1	2.10E-02	2.10E-02	1.05E-02	1.90E-02	2.9E+01	8.9E+05	3.4E+01	6.1E+01		7.2E-04	2.4E-08	6.2E-04	3.4E-04		
AOI-50	VOC	Xylenes (total)	1330-20-7	ID	17	6	3.00E-02	6.60E-01	1.80E-02	3.30E-02	5.4E+04	1.3E+08	1.5E+02	1.9E+05		1.2E-05	5.1E-09	4.4E-03	3.5E-06		
AOI-50	SVOC	Acenaphthene	83-32-9		17	4	4.40E-02	3.90E+00	2.10E-02	2.20E-01	9.7E+04	6.2E+06	1.3E+05		4.0E-05	6.3E-07	3.0E-05				
AOI-50	SVOC	Anthracene	120-12-7	D	17	5	1.50E-01	7.30E+00	2.00E-02	2.10E-01	1.6E+06	2.9E+07	7.3E+05		4.6E-06	2.5E-07	1.0E-05				
AOI-50	SVOC	Benzo(a)anthracene	56-55-3	B2	17	8	2.70E-02	1.50E+01	1.90E-02	1.90E-01			8.0E+01				1.9E-01				
AOI-50	SVOC	Benzo(a)pyrene	50-32-8	B2	17	8	2.90E-02	1.30E+01	2.00E-02	2.00E-01		1.9E+03	8.0E+00			6.8E-03	<b>1.6E+00</b>		2.1E-01		
AOI-50	SVOC	Benzo(b)fluoranthene	205-99-2	B2	17	8	3.10E-02	1.70E+01	2.20E-02	2.30E-01			8.0E+01								
AOI-50	SVOC	Benzo(g,h,i)perylene	191-24-2	D	17	7	4.70E-02	7.60E+00	2.40E-02	2.50E-01		3.5E+05	7.0E+03			2.2E-05	1.1E-03				
AOI-50	SVOC	Benzo(k)fluoranthene	207-08-9	B2	17	7	2.30E-02	8.70E+00	2.00E-02	2.00E-01			8.0E+02				1.1E-02				
AOI-50	SVOC	Biphenyl	92-52-4	D	17	1	6.40E-02	6.40E-02	2.30E-02	6.60E-01											
AOI-50	SVOC	Carbazole	86-74-8	B2	17	4	5.40E-02	3.70E+00	2.40E-02	2.50E-01			2.4E+03				1.5E-03				
AOI-50	SVOC	Chrysene	218-01-9	B2	17	10	1.68E-02	1.50E+01	1.90E-02	1.90E-01			8.0E+03				1.9E-03				
AOI-50	SVOC	Dibenz(a,h)anthracene	53-70-3	B2	17	5	8.40E-02	2.20E+00	2.30E-02	2.40E-01			8.0E+00					2.8E-01			
AOI-50	SVOC	Dibenzofuran	132-64-9	D	17	3	1.00E-01	2.80E+00	2.10E-02	2.20E-01											
AOI-50	SVOC	Di-n-butylphthalate	84-74-2	D	17	2	4.90E-02	2.10E-01	2.50E-02	7.20E-01		1.5E+06	7.6E+02	9.7E+10			1.4E-07	2.8E-04	2.2E-12		
AOI-50	SVOC	Fluoranthene	206-44-0	D	17	8	5.30E-02	4.20E+01	2.50E-02	2.60E-01	8.9E+05	4.1E+06	1.3E+05			4.7E-05	1.0E-05	3.2E-04			
AOI-50	SVOC	Fluorene	86-73-7	D	17	3	1.20E-01	3.20E+00	2.20E-02	2.30E-01	1.5E+05	4.1E+06	8.7E+04			2.1E-05	7.8E-07	3.7E-05	8.6E-02		
AOI-50	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	17	7	3.30E-02	6.90E+00	2.40E-02	2.50E-01			8.0E+01					1.3E-05			
AOI-50	SVOC	2-Methylnaphthalene	91-57-6	ID	17	2	2.50E-02	3.30E-01	2.00E-02	5.60E-01			2.6E+04								
AOI-50	SVOC	Methylphenol (total)	1319-77-3		17	1	2.10E-02	2.10E-02	1.60E-02	4.70E-01		2.9E+06	3.6E+04	2.1E+07			7.2E-09	5.8E-07	1.0E-09		
AOI-50	SVOC	Naphthalene	91-20-3	C	17	1	2.30E-01	2.30E-01	2.10E-02	5.90E-01	3.5E+02	8.8E+04	5.2E+04	1.4E+06			6.6E-04	2.6E-06	4.4E-06	1.6E-07	
AOI-50	SVOC	Phenanthrene	85-01-8	D	17	7	5.00E-02	3.80E+01	2.20E-02	2.30E-01	1.9E+02	2.9E+03	5.2E+03			2.0E-01	1.3E-02	7.3E-03			
AOI-50	SVOC	Pyrene	129-00-0	D	17	8	4.70E-02	3.30E+01	1.90E-02	1.90E-01	7.8E+05	2.9E+06	8.4E+04			4.2E-05	1.1E-05	3.9E-04			
AOI-50	P/PCB	PCBs (total)	1336-36-3	B2	17	1	4.75E-02	4.75E-02	2.30E-02	2.70E-02	8.1E+02	6.5E+03	1.6E+01	4.0E+05		5.9E-05	7.3E-06	3.0E-03	1.2E-07		
AOI-50	INORG	Aluminum	7429-90-5	D	2	2	5.78E+03	6.53E+03					3.7E+05		7.4E+03						
AOI-50	INORG	Antimony	7440-36-0		2	2	2.35E-01	4.10E-01				5.9E+03	6.7E+02		8.0E-01						
AOI-50	INORG	Arsenic	7440-38-2	A	2	2	7.20E+00	1.13E+01				9.1E+02	3.7E+01		6.8E+00		4.9E-03	1.2E-01			
AOI-50	INORG	Barium	7440-39-3	D	2	2	4.97E+01	1.63E+02				1.5E+05	1.3E+05		6.2E+01		6.7E-04	7.8E-04			
AOI-50	INORG	Beryllium	7440-41-7	B1	2	2	2.60E-01	6.60E-01				5.9E+02	1.6E+03		3.1E-01		5.9E-04	2.2E-04			
AOI-50	INORG	Cadmium	7440-43-9	B1	2	2	2.20E-01	7.40E-01				2.2E+03	2.1E+03		1.4E+00						
AOI-50	INORG	Calcium	7440-70-2		2	2	1.55E+04	4.01E+04													
AOI-50	INORG	Chromium (total)	7440-47-3		2	2	1.21E+01	1.79E+01				2.4E+02	9.2E+03		1.8E+01		9.3E-05	2.4E-06			
AOI-50	INORG	Cobalt	7440-48-4	B1	2	2	5.80E+00	6.85E+00				5.9E+03	9.0E+03		5.8E+00		1.7E-04	1.1E-04			
AOI-50	INORG	Copper	7440-50-8	D	2	2	1.21E+01	5.34E+01				5.9E+04	7.3E+04		5.9E+01						
AOI-50	INORG	Cyanide (total)	57-12-5	D	2	2	8.98E-02	4.10E-01				2.5E+02	2.5E+02				1.6E-03	1.6E-03			
AOI-50	INORG	Iron	7439-89-6	D	2	2	1.53E+04	1.60E+04				5.8E+05		1.5E+04			9.3E-04				
AOI-50	INORG	Lead	7439-92-1	B2	2	2	7.70E+00	1.40E+02	</												

**Table 2-1a: Soil Screening Results for On-Site Borings  
Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Table 2-1b: Soil Screening Results for Off-Site Borings Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan																					
Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Residential Soil Volatilization to Indoor Air Criteria (mg/kg)	Residential Soil Volatilization to Ambient Air Criteria (mg/kg)	Residential Particulate Inhalation Criteria (mg/kg)	Residential Direct Contact Criteria (mg/kg)	Site Specific Background (mg/kg)	Ratio of Max Conc to Residential Soil Volatilization to Indoor Air Criteria	Ratio of Max Conc to Residential Soil Volatilization to Ambient Air Criteria	Ratio of Max Conc to Residential Particulate Inhalation Criteria	Ratio of Max Conc to Residential Direct Contact Criteria		
AOI-48	VOC	Acetone	67-64-1	ID	2	1	1.20E-01	1.20E-01	8.20E-02	8.20E-02	1.1E+05	1.3E+05	3.9E+08	2.3E+04		1.1E-06	9.2E-07	3.1E-10	5.2E-06		
AOI-48	VOC	Ethyl Benzene	100-41-4	D	2	1	1.50E-02	1.50E-02	1.70E-02	1.70E-02	8.7E+01	7.2E+02	1.0E+07	1.4E+02		1.7E-04	2.1E-05	1.5E-09	1.1E-04		
AOI-48	VOC	Toluene	108-88-3	D	2	1	5.30E-02	5.30E-02	1.20E-02	1.20E-02	2.5E+02	2.8E+03	2.7E+07	2.5E+02		2.1E-04	1.9E-05	2.0E-09	2.1E-04		
AOI-48	VOC	Xylenes (total)	1330-20-7	ID	2	1	1.00E-01	1.00E-01	2.30E-02	2.30E-02	1.5E+02	4.6E+04	2.9E+08	1.5E+02		6.7E-04	2.2E-06	3.4E-10	6.7E-04		
AOI-48	INORG	Aluminum	7429-90-5	D	2	2	1.99E+03	1.34E+04						5.0E+04	7.4E+03				1.2E-01		
AOI-48	INORG	Antimony	7440-36-0		2	1	1.40E+00	1.40E+00	6.20E-01	6.20E-01			1.3E+04	1.8E+02	8.0E-01			4.6E-05	3.3E-03		
AOI-48	INORG	Arsenic	7440-38-2	A	2	2	3.60E+00	1.10E+01					7.2E+02	7.6E+00	6.8E+00			5.8E-03	5.5E-01		
AOI-48	INORG	Barium	7440-39-3	D	2	2	2.72E+01	7.63E+01					3.3E+05	3.7E+04	6.2E+01			4.3E-05	3.9E-04		
AOI-48	INORG	Beryllium	7440-41-7	B1	2	1	5.80E-01	5.80E-01	5.40E-02	5.40E-02			1.3E+03	4.1E+02	3.1E-01			2.0E-04	6.5E-04		
AOI-48	INORG	Cadmium	7440-43-9	B1	2	2	1.50E-01	1.70E-01					1.7E+03	5.5E+02	1.4E+00						
AOI-48	INORG	Calcium	7440-70-2		2	2	4.40E+03	2.17E+04													
AOI-48	INORG	Chromium (total)	7440-47-3		2	2	2.17E+01	2.30E+01					2.6E+02	2.5E+03	1.8E+01			2.0E-02	2.0E-03		
AOI-48	INORG	Cobalt	7440-48-4	B1	2	2	3.30E+00	1.29E+01					1.3E+04	2.6E+03	5.8E+00			5.4E-04	2.7E-03		
AOI-48	INORG	Copper	7440-50-8	D	2	2	1.92E+01	9.48E+01					1.3E+05	2.0E+04	5.9E+01			2.7E-04	1.8E-03		
AOI-48	INORG	Iron	7439-89-6	D	2	2	1.76E+04	2.79E+04						1.6E+05	1.5E+04				7.8E-02		
AOI-48	INORG	Lead	7439-92-1	B2	2	2	1.23E+01	2.47E+01					1.0E+05	4.0E+02	6.8E+01						
AOI-48	INORG	Magnesium	7439-95-4		2	2	1.22E+03	1.52E+04					6.7E+06	1.0E+06				2.3E-03	1.5E-02		
AOI-48	INORG	Manganese	7439-96-5	D	2	2	2.40E+02	5.06E+02					3.3E+03	2.5E+04	5.2E+02						
AOI-48	INORG	Mercury	7439-97-6	D	2	2	3.60E-02	1.40E-01			4.8E+01	5.2E+01	2.0E+04	1.6E+02	1.9E-01						
AOI-48	INORG	Nickel	7440-02-0	A	2	2	1.73E+01	3.05E+01					1.3E+04	4.0E+04	1.5E+01			1.2E-03	3.8E-04		
AOI-48	INORG	Potassium	7440-09-7		2	2	1.85E+02	1.26E+03											4.0E-04		
AOI-48	INORG	Sodium	7440-23-5		2	2	1.14E+02	4.01E+02						1.0E+06					4.0E-04		
AOI-48	INORG	Thallium	7440-28-0		2	1	1.10E+00	1.10E+00	5.90E-01	5.90E-01			3.5E+01	9.3E-01				4.9E-03			
AOI-48	INORG	Vanadium	7440-62-2		2	2	7.00E+00	3.17E+01					7.5E+02	1.8E+01				1.8E-02			
AOI-48	INORG	Zinc	7440-66-6	D	2	2	5.31E+01	7.97E+01					1.7E+05	9.0E+01							
AOI-48 (NW)	VOC	Acetone	67-64-1	ID	19	5	5.80E-02	1.50E-01	5.50E-02	6.70E-02	1.1E+05	1.3E+05	3.9E+08	2.3E+04		1.4E-06	1.2E-06	3.8E-10	6.5E-06		
AOI-48 (NW)	VOC	Benzene	71-43-2	A	19	1	1.20E-02	1.20E-02	7.95E-03	9.70E-03	1.6E+00	1.3E+01	3.8E+05	1.8E+02		7.5E-03	9.2E-04	3.2E-08	6.7E-05		
AOI-48 (NW)	VOC	Cyclohexane	110-82-7	ID	19	1	1.70E-02	1.70E-02	7.10E-03	8.70E-03											
AOI-48 (NW)	VOC	cis-1,2-Dichloroethene	156-59-2	D	19	2	5.00E-02	6.40E-01	8.95E-03	1.10E-02	2.2E+01	1.8E+02	2.3E+06	6.4E+02		2.9E-02	3.6E-03	2.8E-07	1.0E-03		
AOI-48 (NW)	VOC	Methyl Acetate	79-20-9		19	4	3.60E-02	2.40E-01	2.75E-02	3.40E-02											
AOI-48 (NW)	VOC	Methylcyclohexane	108-87-2		19	2	1.20E-02	3.60E-02	1.00E-02	1.20E-02											
AOI-48 (NW)	VOC	Trichloroethene	79-01-6	C-B2	19	1	2.40E+00	2.40E+00	9.95E-03	1.20E-02	7.1E+00	7.8E+01	1.8E+06	5.0E+02		3.4E-01	3.1E-02	1.3E-06	4.8E-03		
AOI-48 (NW)	INORG	Antimony	7440-36-0		2	2	3.60E-01	5.90E-01					1.3E+04	1.8E+02	8.0E-01						
AOI-48 (NW)	INORG	Arsenic	7440-38-2	A	2	2	5.70E+00	9.60E+00					7.2E+02	7.6E+00	6.8E+00			3.9E-03	3.7E-01		
AOI-48 (NW)	INORG	Barium	7440-39-3	D	2	2	4.19E+01	5.80E+01					3.3E+05	3.7E+04	6.2E+01						
AOI-48 (NW)	INORG	Beryllium	7440-41-7	B1	2	2	3.40E-01	5.10E-01					1.3E+03	4.1E+02	3.1E-01			1.5E-04	4.8E-04		
AOI-48 (NW)	INORG	Cadmium	7440-43-9	B1	2	1	3.20E-02	3.20E-02	1.90E-02	1.90E-02			1.7E+03	5.5E+02	1.4E+00						
AOI-48 (NW)	INORG	Calcium	7440-70-2		2	2	2.07E+03	2.58E+03													
AOI-48 (NW)	INORG	Chromium (total)	7440-47-3		2	2	9.50E+00	1.48E+01					2.6E+02	2.5E+03	1.8E+01						
AOI-48 (NW)	IN																				

**Table 2-1b: Soil Screening Results for Off-Site Borings**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Residential Soil Volatilization to Indoor Air Criteria (mg/kg)	Residential Soil Volatilization to Ambient Air Criteria (mg/kg)	Residential Particulate Inhalation Criteria (mg/kg)	Residential Direct Contact Criteria (mg/kg)	Site Specific Background (mg/kg)	Ratio of Max Conc to Residential Soil Volatilization to Indoor Air Criteria	Ratio of Max Conc to Residential Soil Volatilization to Ambient Air Criteria	Ratio of Max Conc to Residential Particulate Inhalation Criteria	Ratio of Max Conc to Residential Direct Contact Criteria
		<b>Notes (Continued):</b>																	
		The toxicity values that MDEQ used to calculate its screening criteria for 1,1-Dichloroethene (1,1-DCE) are different from the toxicity values for 1,1-DCE published in IRIS (January, 2003). The updated screening criteria for 1,1-DCE, based on IRIS toxicity values, are: 36,400 mg/kg (industrial soil direct contact), 49.2 mg/kg (industrial soil volatilization to indoor air), 552 mg/kg (industrial soil volatilization to ambient air - infinite depth), and 1.18E+7 mg/kg (soil particulate inhalation). There are no detected concentrations of 1,1-DCE in soil at the Site that exceed the updated screening criteria.																	
		Chem Group - Chemical Group																	
		Carc Class - EPA Weight-of-Evidence Cancer Classification																	
		A = Known Human Carcinogen-sufficient evidence of carcinogenicity in humans; B1 = Human Carcinogen-limited evidence of carcinogenicity in humans;																	
		B2 = Probable Human Carcinogen-sufficient evidence of carcinogenicity in animals with inadequate or lack of evidence in humans; C = Possible Human Carcinogen-limited evidence of carcinogenicity in animals and inadequate or lack of evidence in humans; D = Not classifiable as to human carcinogenicity;																	
		ID = Data Are Inadequate for An Assessment of Human Carcinogenic Potential																	
		Min QL - Minimum Quantitation Limit																	
		Max QL - Maximum Quantitation Limit																	
		The site-specific background concentrations were calculated using surface soil data from background sample locations.																	

**Table 2-1c: Soil Samples Exceeding Screening Criteria  
Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

<b>AOI</b>	<b>Location</b>	<b>Sample ID</b>	<b>Top Depth (feet)</b>	<b>Bottom Depth (feet)</b>	<b>Sample Date</b>	<b>Chem Group</b>	<b>Chemical</b>	<b>CASRN</b>	<b>Conc (mg/kg)</b>	<b>Site Specific Background (mg/kg)</b>	<b>Industrial Soil Volatilization to Ambient Air Criteria (mg/kg)</b>	<b>Ratio of Conc to Industrial Soil Volatilization to Ambient Air Criteria</b>	<b>Industrial Particulate Inhalation Criteria (mg/kg)</b>	<b>Ratio of Conc to Industrial Particulate Inhalation Criteria</b>	<b>Industrial Direct Contact Criteria (mg/kg)</b>	<b>Ratio of Conc to Industrial Direct Contact Criteria</b>	<b>Site Specific Industrial Volatilization to Indoor Air Criteria (mg/kg)</b>	<b>Ratio of Conc to Site Specific Industrial Volatilization to Indoor Air Criteria</b>
AOI-26	B-4262	4262C-050603-1610	8	10	5/6/2003	INORG	Arsenic	7440-38-2	5.48E+01	6.8E+00			9.1E+02	5.3E-02	3.7E+01	<b>1.3E+00</b>		
AOI-45	B-4452	452A-110802-1110DL		2	11/8/2002	SVOC	Benzo(a)pyrene	50-32-8	9.20E+00				1.9E+03	4.8E-03	8.0E+00	<b>1.2E+00</b>		
AOI-50	MW-4634S	634S-052303-0850DL		2	5/23/2003	SVOC	Benzo(a)pyrene	50-32-8	1.30E+01				1.9E+03	6.8E-03	8.0E+00	<b>1.6E+00</b>		
<b>Note:</b>																		
The site-specific background concentrations were calculated using surface soil data from background sample locations.																		

**Table 2-2: LNAPL Concentrations and Calculated Smear Zone Soil Screening Results  
Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

**Table 2-3a: Groundwater Screening Results for On-Site Monitoring Wells**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Well Zone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Groundwater Contact Criteria (mg/L)	Site Specific Industrial GW Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria	Ratio of Max Detected to Groundwater Contact Criteria	Ratio of Max Detected to Site Specific Industrial GW Volatilization to Indoor Air Criteria	
AOI-08	Zone1	INORG	Aluminum	7429-90-5	TOTAL	D	1	1	3.80E-01	3.80E-01			4.1E+00	6.4E+04		9.3E-02	5.9E-06		
AOI-08	Zone1	INORG	Barium	7440-39-3	TOTAL	D	1	1	7.80E-02	7.80E-02			2.0E+00	1.4E+04		3.9E-02	5.6E-06		
AOI-08	Zone1	INORG	Cadmium	7440-43-9	TOTAL	B1	1	1	5.00E-04	5.00E-04			5.0E-03	1.9E+02		1.0E-01	2.6E-06		
AOI-08	Zone1	INORG	Calcium	7440-70-2	TOTAL			1	1	1.09E+02	1.09E+02								
AOI-08	Zone1	INORG	Chromium VI	18540-29-9	TOTAL	A	1	1	7.00E+00	7.00E+00			1.0E-01	4.6E+02		<b>7.0E+01</b>	1.5E-02		
AOI-08	Zone1	INORG	Cobalt	7440-48-4	TOTAL	B1	1	1	4.00E-03	4.00E-03			1.0E-01	2.4E+03		4.0E-02	1.7E-06		
AOI-08	Zone1	INORG	Copper	7440-50-8	TOTAL	D	1	1	1.20E-02	1.20E-02			4.0E+00	7.4E+03		3.0E-03	1.6E-06		
AOI-08	Zone1	INORG	Cyanide (total)	57-12-5	TOTAL	D	1	1	2.20E-03	2.20E-03			2.0E-01	5.7E+01		1.1E-02	3.9E-05		
AOI-08	Zone1	INORG	Iron	7439-89-6	TOTAL	D	1	1	8.40E-01	8.40E-01			5.6E+00	5.8E+04		1.5E-01	1.4E-05		
AOI-08	Zone1	INORG	Magnesium	7439-95-4	TOTAL			1	1	4.92E+01	4.92E+01			1.1E+03	1.0E+06		4.5E-02	4.9E-05	
AOI-08	Zone1	INORG	Manganese	7439-96-5	TOTAL	D	1	1	1.90E-01	1.90E-01			2.5E+00	9.1E+03		7.6E-02	2.1E-05		
AOI-08	Zone1	INORG	Nickel	7440-02-0	TOTAL	A	1	1	9.90E-03	9.90E-03			1.0E-01	7.4E+04		9.9E-02	1.3E-07		
AOI-08	Zone1	INORG	Potassium	7440-09-7	TOTAL			1	1	3.30E+00	3.30E+00								
AOI-08	Zone1	INORG	Sodium	7440-23-5	TOTAL			1	1	7.57E+01	7.57E+01			3.5E+02	1.0E+06		2.2E-01	7.6E-05	
AOI-08	Zone1	INORG	Vanadium	7440-62-2	TOTAL			1	1	1.20E-03	1.20E-03			6.2E-02	9.7E+02		1.9E-02	1.2E-06	
AOI-11	Zone1	VOC	Benzene	71-43-2	TOTAL	A	5	2	1.30E-01	2.20E-01	3.70E-04	3.70E-04	5.0E-03	1.1E+01	4.3E+03	<b>4.4E+01</b>	2.0E-02	5.1E-05	
AOI-11	Zone1	VOC	Cumene	98-82-8	TOTAL	D	5	1	8.00E-02	8.00E-02	3.90E-04	2.80E-03	2.3E+00	5.6E+01	6.9E+04	3.5E-02	1.4E-03	1.2E-06	
AOI-11	Zone1	VOC	Cyclohexane	110-82-7	TOTAL	ID	5	2	5.40E-03	2.50E-01	3.30E-04	3.30E-04			3.5E+05			7.1E-07	
AOI-11	Zone1	VOC	1,2-Dichloroethane	107-06-2	TOTAL	B2	5	1	1.20E-03	1.20E-03	2.80E-04	3.50E-02	5.0E-03	1.9E+01	1.8E+04	2.4E-01	6.3E-05	6.5E-08	
AOI-11	Zone1	VOC	Ethyl Benzene	100-41-4	TOTAL	D	5	2	3.30E-02	1.40E+00	4.10E-04	4.10E-04	7.0E-01	1.7E+02	5.6E+05	<b>2.0E+00</b>	8.2E-03	2.5E-06	
AOI-11	Zone1	VOC	Methyl tert-butyl ether	1634-04-4	TOTAL		5	3	9.60E-04	4.00E-03	2.70E-04	3.40E-02	6.9E-01	6.1E+02	6.3E+05	5.8E-03	6.6E-06	6.3E-09	
AOI-11	Zone1	VOC	Methylcyclohexane	108-87-2	TOTAL		5	1	2.20E-01	2.20E-01	4.20E-04	3.00E-03			1.5E+06			1.5E-07	
AOI-11	Zone1	VOC	Toluene	108-88-3	TOTAL	D	5	1	2.00E+00	2.00E+00	3.90E-04	2.80E-03	1.0E+00	5.3E+02	4.9E+05	<b>2.0E+00</b>	3.8E-03	4.1E-06	
AOI-11	Zone1	VOC	Xylenes (total)	1330-20-7	TOTAL	ID	5	2	8.00E-03	1.20E+01	4.40E-04	4.40E-04	1.0E+01	1.9E+02	5.7E+05	<b>1.2E+00</b>	6.3E-02	2.1E-05	
AOI-11	Zone1	SVOC	Benzo(a)anthracene	56-55-3	TOTAL	B2	5	1	8.50E-03	8.50E-03	6.80E-04	8.50E-03	8.5E-03	9.4E-03		1.0E+00	9.0E-01		
AOI-11	Zone1	SVOC	Benzo(a)pyrene	50-32-8	TOTAL	B2	6	2	1.30E-02	1.90E-02	5.30E-04	6.60E-03	5.0E-03	2.0E-03		<b>3.8E+00</b>	<b>9.5E+00</b>		
AOI-11	Zone1	SVOC	Benzo(b)fluoranthene	205-99-2	TOTAL	B2	6	2	2.20E-02	3.00E-02	7.10E-04	8.90E-03	2.0E-03	2.0E-03		<b>1.5E+01</b>	<b>1.5E+01</b>		
AOI-11	Zone1	SVOC	Benzo(g,h,i)perylene	191-24-2	TOTAL	D	6	2	1.10E-02	1.50E-02	7.00E-04	8.80E-03	5.0E-03	5.0E-03		<b>3.0E+00</b>	<b>3.0E+00</b>		
AOI-11	Zone1	SVOC	Benzo(k)fluoranthene	207-08-9	TOTAL	B2	6	2	1.30E-02	1.60E-02	6.40E-04	8.00E-03	5.0E-03	5.0E-03		<b>3.2E+00</b>	<b>3.2E+00</b>		
AOI-11	Zone1	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	TOTAL	B2	5	1	6.40E-03	6.40E-03	2.00E-04	5.40E-03	6.0E-03	3.2E-01	1.6E+08	<b>1.1E+00</b>	2.0E-02	4.1E-11	
AOI-11	Zone1	SVOC	Caprolactam	105-60-2	TOTAL		5	1	3.90E-03	3.90E-03	2.50E-03	5.60E-03	1.7E+01	3.9E+05		2.3E-04	1.0E-08		
AOI-11	Zone1	SVOC	Carbazole	86-74-8	TOTAL	B2	5	1	8.40E-03	8.40E-03	6.10E-04	7.60E-03	3.5E-01	7.4E+00		2.4E-02	1.1E-03		
AOI-11	Zone1	SVOC	Chrysene	218-01-9	TOTAL	B2	6	2	1.90E-02	2.40E-02	6.70E-04	8.40E-03	5.0E-03	5.0E-03		<b>4.8E+00</b>	<b>4.8E+00</b>		
AOI-11	Zone1	SVOC	Dibenz(a,h)anthracene	53-70-3	TOTAL	B2	6	2	2.10E-03	4.10E-03	6.80E-04	8.50E-03	2.0E-03	2.0E-03		<b>2.1E+00</b>	<b>2.1E+00</b>		
AOI-11	Zone1	SVOC	Fluoranthene	206-44-0	TOTAL	D	5	2	8.10E-04	4.30E-02	7.10E-04	8.90E-03	2.1E-01	2.1E-01		2.0E-01	2.0E-01		
AOI-11	Zone1	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	TOTAL	B2	6	2	1.00E-02	1.50E-02	6.30E-04	8.60E-03	2.0E-03	2.0E-03		<b>7.5E+00</b>	<b>7.5E+00</b>		
AOI-11	Zone1	SVOC	2-Methylnaphthalene	91-57-6	TOTAL	ID	5	1	1.30E-01	1.30E-01	6.40E-04	1.30E-03	7.5E-01	2.5E+01		1.7E-01	5.2E-03		
AOI-11	Zone1	SVOC	Naphthalene	91-20-3	TOTAL	C	5	2	3.80E-03	5.20E-01	7.50E-04	1.50E-03	1.5E+00	3.1E+01	4.7E+05	3.5E-01	1.7E-02	1.1E-06	
AOI-11	Zone1	SVOC	Phenanthrene	85-01-8	TOTAL	D	5	1	3.30E-02	3.30E-02	6.80E-04	8.50E-03	1.5E-01	1.0E+00		2.2E-01	3.3E-02		
AOI-11	Zone1	SVOC	Phenol	108-95-2	TOTAL	ID	5	1	4.20E-03	4.20E-03	2								

**Table 2-3a: Groundwater Screening Results for On-Site Monitoring Wells**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Well Zone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Groundwater Contact Criteria (mg/L)	Site Specific Industrial GW Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria	Ratio of Max Detected to Groundwater Contact Criteria	Ratio of Max Detected to Site Specific Industrial GW Volatilization to Indoor Air Criteria
AOI-13	Zone1	VOC	1,1,1-Trichloroethane	71-55-6	TOTAL	D	4	1	4.90E-04	4.90E-04	3.90E-04	5.60E-03	2.0E-01	1.3E+03	1.6E+06	2.5E-03	3.8E-07	3.1E-10
AOI-13	Zone1	VOC	Trichloroethene	79-01-6	TOTAL	C-B2	4	1	4.50E-01	4.50E-01	4.20E-04	4.20E-04	5.0E-03	2.2E+01	2.8E+05	9.0E+01	2.0E-02	1.6E-06
AOI-13	Zone1	VOC	Vinyl Chloride	75-01-4	TOTAL	A	4	4	9.10E-04	1.40E-01			2.0E-03	1.0E+00	1.3E+03	7.0E+01	1.4E-01	1.1E-04
AOI-13	Zone1	VOC	Xylenes (total)	1330-20-7	TOTAL	ID	4	1	2.40E-03	2.40E-03	4.40E-04	6.30E-03	1.0E+01	1.9E+02	5.7E+05	2.4E-04	1.3E-05	4.2E-09
AOI-13	Zone1	SVOC	Caprolactam	105-60-2	TOTAL		4	1	1.20E-03	1.20E-03	9.00E-03	2.50E-01	1.7E+01	3.9E+05		7.1E-05	3.1E-09	
AOI-13	Zone1	SVOC	Di-n-butylphthalate	84-74-2	TOTAL	D	4	1	4.10E-04	4.10E-04	7.40E-03	6.70E-02	2.5E+00	1.1E+01	1.4E+09	1.6E-04	3.7E-05	2.9E-13
AOI-13	Zone1	SVOC	Pentachlorophenol	87-86-5	TOTAL	B2	4	1	4.10E-03	4.10E-03	5.20E-02	2.40E-01	1.0E-03	2.0E-01	6.1E+07	4.1E+00	2.1E-02	6.7E-11
AOI-13	Zone1	INORG	Aluminum	7429-90-5	TOTAL	D	4	2	4.70E-01	1.10E+00	5.70E-02	5.70E-02	4.1E+00	6.4E+04		2.7E-01	1.7E-05	
AOI-13	Zone1	INORG	Arsenic	7440-38-2	TOTAL	A	4	4	8.90E-03	7.60E-02			5.0E-02	4.3E+00		1.5E+00	1.8E-02	
AOI-13	Zone1	INORG	Barium	7440-39-3	TOTAL	D	4	4	7.00E-02	8.70E-01			2.0E+00	1.4E+04		4.4E-01	6.2E-05	
AOI-13	Zone1	INORG	Cadmium	7440-43-9	TOTAL	B1	4	4	3.10E-04	7.80E-04			5.0E-03	1.9E+02		1.6E-01	4.1E-06	
AOI-13	Zone1	INORG	Calcium	7440-70-2	TOTAL		4	4	1.48E+02	4.55E+02								
AOI-13	Zone1	INORG	Chromium (total)	7440-47-3	TOTAL		4	2	2.10E-03	9.30E-03	1.50E-03	1.50E-03	1.0E-01	4.6E+02		9.3E-02	2.0E-05	
AOI-13	Zone1	INORG	Cobalt	7440-48-4	TOTAL	B1	4	3	9.70E-04	4.70E-03	7.40E-04	7.40E-04	1.0E-01	2.4E+03		4.7E-02	2.0E-06	
AOI-13	Zone1	INORG	Copper	7440-50-8	TOTAL	D	4	4	2.00E-03	6.80E-03			4.0E+00	7.4E+03		1.7E-03	9.2E-07	
AOI-13	Zone1	INORG	Cyanide (total)	57-12-5	TOTAL	D	4	1	2.00E-03	2.00E-03	1.80E-03	1.80E-03	2.0E-01	5.7E+01		1.0E-02	3.5E-05	
AOI-13	Zone1	INORG	Iron	7439-89-6	TOTAL	D	4	4	3.60E+00	3.12E+01			5.6E+00	5.8E+04		5.6E+00	5.4E-04	
AOI-13	Zone1	INORG	Lead	7439-92-1	TOTAL	B2	4	2	2.90E-03	7.20E-03	1.60E-03	1.60E-03	4.0E-03			1.8E+00		
AOI-13	Zone1	INORG	Magnesium	7439-95-4	TOTAL		4	4	3.58E+01	4.93E+01			1.1E+03	1.0E+06		4.5E-02	4.9E-05	
AOI-13	Zone1	INORG	Manganese	7439-96-5	TOTAL	D	4	4	2.10E-01	1.70E+00			2.5E+00	9.1E+03		6.8E-01	1.9E-04	
AOI-13	Zone1	INORG	Mercury	7439-97-6	TOTAL	D	4	1	9.00E-05	9.00E-05	8.70E-05	8.70E-05	2.0E-03	5.6E-02	4.6E+01	4.5E-02	1.6E-03	2.0E-06
AOI-13	Zone1	INORG	Nickel	7440-02-0	TOTAL	A	4	4	3.80E-03	9.50E-03			1.0E-01	7.4E+04		9.5E-02	1.3E-07	
AOI-13	Zone1	INORG	Potassium	7440-09-7	TOTAL		4	4	1.11E+01	3.14E+01								
AOI-13	Zone1	INORG	Sodium	7440-23-5	TOTAL		4	4	6.68E+02	1.29E+03			3.5E+02	1.0E+06		3.7E+00	1.3E-03	
AOI-13	Zone1	INORG	Thallium	7440-28-0	TOTAL		4	1	5.30E-03	5.30E-03	5.20E-03	5.20E-03	2.0E-03	1.3E+01		2.7E+00	4.1E-04	
AOI-13	Zone1	INORG	Vanadium	7440-62-2	TOTAL		4	2	5.40E-03	8.30E-03	6.70E-04	6.70E-04	6.2E-02	9.7E+02		1.3E-01	8.6E-06	
AOI-13	Zone1	INORG	Zinc	7440-66-6	TOTAL	D	4	2	4.90E-02	1.10E-01	1.40E-02	1.40E-02	5.0E+00	1.1E+05		2.2E-02	1.0E-06	
AOI-22	Zone1	VOC	Chloroethane	75-00-3	TOTAL		2	1	5.60E-04	5.60E-04	2.90E-04	2.90E-04	1.7E+00	4.4E+02	7.6E+06	3.3E-04	1.3E-06	7.4E-11
AOI-22	Zone1	VOC	1,1-Dichloroethane	75-34-3	TOTAL	C	2	2	9.10E-03	3.90E-02			2.5E+00	2.4E+03	5.4E+05	1.6E-02	1.6E-05	7.2E-08
AOI-22	Zone1	VOC	1,1-Dichloroethene	75-35-4	TOTAL	C	2	1	8.80E-04	8.80E-04	3.10E-04	3.10E-04	7.0E-03	1.1E+01	1.2E+04	1.3E-01	8.0E-05	7.3E-08
AOI-22	Zone1	VOC	cis-1,2-Dichloroethene	156-59-2	TOTAL	D	2	1	1.70E-03	1.70E-03	3.50E-04	3.50E-04	7.0E-02	2.0E+02	1.3E+06	2.4E-02	8.5E-06	1.3E-09
AOI-22	Zone1	VOC	1,1,1-Trichloroethane	71-55-6	TOTAL	D	2	1	5.50E-03	5.50E-03	3.90E-04	3.90E-04	2.0E-01	1.3E+03	1.6E+06	2.8E-02	4.2E-06	3.5E-09
AOI-22	Zone1	VOC	Trichloroethene	79-01-6	TOTAL	C-B2	2	1	1.70E-03	1.70E-03	4.20E-04	4.20E-04	5.0E-03	2.2E+01	2.8E+05	3.4E-01	7.7E-05	6.2E-09
AOI-22	Zone1	SVOC	Caprolactam	105-60-2	TOTAL		2	1	3.50E-03	3.50E-03	4.50E-04	4.50E-04	1.7E+01	3.9E+05		2.1E-04	9.0E-09	
AOI-22	Zone1	INORG	Aluminum	7429-90-5	TOTAL	D	2	2	6.50E-01	9.30E-01			4.1E+00	6.4E+04		2.3E-01	1.5E-05	
AOI-22	Zone1	INORG	Barium	7440-39-3	TOTAL	D	2	2	4.70E-02	2.00E-01			2.0E+00	1.4E+04		1.0E-01	1.4E-05	
AOI-22	Zone1	INORG	Cadmium	7440-43-9	TOTAL	B1	2	1	2.90E-04	2.90E-04	2.80E-04	2.80E-04	5.0E-03	1.9E+02		5.8E-02	1.5E-06	
AOI-22	Zone1	INORG	Calcium	7440-70-2	TOTAL		2	2	4.92E+01	1.62E+02								
AOI-22	Zone1	INORG	Cobalt	7440-48-4	TOTAL	B1	2	2	1.00E-03	2.20E-03			1.0E-01	2.4E+03		2.2E-02	9.2E-07	
AOI-22	Zone1	INORG	Copper	7440-50-8	TOTAL	D	2	2	1.80E-03	3.60E-03			4.0E+00	7.4E+03		9.0E-04	4.9E-07	
AOI-22	Zone1	INORG	Iron	7439														

**Table 2-3a: Groundwater Screening Results for On-Site Monitoring Wells**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Well Zone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Groundwater Contact Criteria (mg/L)	Site Specific Industrial GW Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria	Ratio of Max Detected to Groundwater Contact Criteria	Ratio of Max Detected to Site Specific Industrial GW Volatilization to Indoor Air Criteria
AOI-26	Zone1	VOC	Chloroform	67-66-3	TOTAL	B2	30	1	1.10E-02	1.10E-02	3.50E-04	5.80E-02	1.0E-01	1.5E+02	1.7E+04	1.1E-01	7.3E-05	6.6E-07
AOI-26	Zone1	VOC	Cumene	98-82-8	TOTAL	D	26	1	2.00E-03	2.00E-03	3.90E-04	6.50E-02	2.3E+00	5.6E+01	6.9E+04	8.7E-04	3.6E-05	2.9E-08
AOI-26	Zone1	VOC	Cyclohexane	110-82-7	TOTAL	ID	26	1	1.60E-03	1.60E-03	3.30E-04	5.50E-02			3.5E+05			4.5E-09
AOI-26	Zone1	VOC	1,2-Dichlorobenzene	95-50-1	TOTAL	D	30	3	3.20E-02	7.60E-02	3.80E-04	6.30E-02	6.0E-01	1.6E+02	4.7E+05	1.3E-01	4.8E-04	1.6E-07
AOI-26	Zone1	VOC	1,4-Dichlorobenzene	106-46-7	TOTAL	C	30	2	5.70E-03	7.60E-03	3.80E-04	6.30E-02	7.5E-02	6.4E+00	1.2E+06	1.0E-01	1.2E-03	6.5E-09
AOI-26	Zone1	VOC	1,1-Dichloroethane	75-34-3	TOTAL	C	30	17	7.85E-04	3.60E-01	3.00E-04	7.50E-04	2.5E+00	2.4E+03	5.4E+05	1.4E-01	1.5E-04	6.6E-07
AOI-26	Zone1	VOC	1,2-Dichloroethane	107-06-2	TOTAL	B2	30	3	4.90E-03	1.70E-02	2.80E-04	4.70E-02	5.0E-03	1.9E+01	1.8E+04	3.4E+00	8.9E-04	9.2E-07
AOI-26	Zone1	VOC	1,1-Dichloroethene	75-35-4	TOTAL	C	30	8	1.50E-03	6.00E-02	3.10E-04	7.80E-04	7.0E-03	1.1E+01	1.2E+04	8.6E+00	5.5E-03	5.0E-06
AOI-26	Zone1	VOC	cis-1,2-Dichloroethene	156-59-2	TOTAL	D	30	19	9.60E-04	4.40E-01	3.50E-04	5.80E-02	7.0E-02	2.0E+02	1.3E+06	6.3E+00	2.2E-03	3.4E-07
AOI-26	Zone1	VOC	trans-1,2-Dichloroethene	156-60-5	TOTAL		30	7	5.20E-04	1.70E-02	3.30E-04	5.50E-02	1.0E-01	2.2E+02	7.7E+05	1.7E-01	7.7E-05	2.2E-08
AOI-26	Zone1	VOC	Ethyl Benzene	100-41-4	TOTAL	D	30	1	1.40E-03	1.40E-03	4.10E-04	6.80E-02	7.0E-01	1.7E+02	5.6E+05	2.0E-03	8.2E-06	2.5E-09
AOI-26	Zone1	VOC	4-Methyl-2-pentanone	108-10-1	TOTAL	ID	26	1	4.20E-04	4.20E-04	2.60E-04	4.30E-02	5.2E+00	1.3E+04	1.1E+07	8.1E-05	3.2E-08	3.8E-11
AOI-26	Zone1	VOC	Methylcyclohexane	108-87-2	TOTAL		26	1	4.40E-03	4.40E-03	4.20E-04	7.00E-02			1.5E+06			3.0E-09
AOI-26	Zone1	VOC	Methylene Chloride	75-09-2	TOTAL	B2	30	1	5.20E-03	5.20E-03	2.90E-04	4.80E-02	5.0E-03	2.2E+02	2.1E+05	1.0E+00	2.4E-05	2.5E-08
AOI-26	Zone1	VOC	Toluene	108-88-3	TOTAL	D	30	1	9.40E-04	9.40E-04	3.90E-04	6.50E-02	1.0E+00	5.3E+02	4.9E+05	9.4E-04	1.8E-06	1.9E-09
AOI-26	Zone1	VOC	1,1,1-Trichloroethane	71-55-6	TOTAL	D	30	12	1.00E-03	3.30E+00	3.90E-04	9.80E-04	2.0E-01	1.3E+03	1.6E+06	1.7E+01	2.5E-03	2.1E-06
AOI-26	Zone1	VOC	Trichloroethene	79-01-6	TOTAL	C-B2	30	16	4.80E-04	9.10E-01	4.20E-04	7.00E-02	5.0E-03	2.2E+01	2.8E+05	1.8E+02	4.1E-02	3.3E-06
AOI-26	Zone1	VOC	Vinyl Chloride	75-01-4	TOTAL	A	26	14	4.00E-04	2.00E-01	3.60E-04	6.00E-02	2.0E-03	1.0E+00	1.3E+03	1.0E+02	2.0E-01	1.5E-04
AOI-26	Zone1	VOC	Xylenes (total)	1330-20-7	TOTAL	ID	30	1	8.90E-03	8.90E-03	4.40E-04	7.30E-02	1.0E+01	1.9E+02	5.7E+05	8.9E-04	4.7E-05	1.6E-08
AOI-26	Zone1	INORG	Aluminum	7429-90-5	TOTAL	D	1	1	3.30E-01	3.30E-01			4.1E+00	6.4E+04		8.0E-02	5.2E-06	
AOI-26	Zone1	INORG	Arsenic	7440-38-2	TOTAL	A	1	1	2.10E-02	2.10E-02			5.0E-02	4.3E+00		4.2E-01	4.9E-03	
AOI-26	Zone1	INORG	Barium	7440-39-3	TOTAL	D	1	1	1.00E-01	1.00E-01			2.0E+00	1.4E+04		5.0E-02	7.1E-06	
AOI-26	Zone1	INORG	Cadmium	7440-43-9	TOTAL	B1	1	1	4.40E-03	4.40E-03			5.0E-03	1.9E+02		8.8E-01	2.3E-05	
AOI-26	Zone1	INORG	Calcium	7440-70-2	TOTAL		1	1	1.60E+02	1.60E+02								
AOI-26	Zone1	INORG	Chromium (total)	7440-47-3	TOTAL		1	1	2.30E-03	2.30E-03			1.0E-01	4.6E+02		2.3E-02	5.0E-06	
AOI-26	Zone1	INORG	Cobalt	7440-48-4	TOTAL	B1	1	1	2.30E-03	2.30E-03			1.0E-01	2.4E+03		2.3E-02	9.6E-07	
AOI-26	Zone1	INORG	Cyanide (total)	57-12-5	TOTAL	D	1	1	4.30E-03	4.30E-03			2.0E-01	5.7E+01		2.2E-02	7.5E-05	
AOI-26	Zone1	INORG	Iron	7439-89-6	TOTAL	D	4	4	3.90E+00	1.29E+01			5.6E+00	5.8E+04		2.3E+00	2.2E-04	
AOI-26	Zone1	INORG	Magnesium	7439-95-4	TOTAL		1	1	5.24E+01	5.24E+01			1.1E+03	1.0E+06		4.8E-02	5.2E-05	
AOI-26	Zone1	INORG	Manganese	7439-96-5	TOTAL	D	4	4	7.40E-02	8.50E-01			2.5E+00	9.1E+03		3.4E-01	9.3E-05	
AOI-26	Zone1	INORG	Manganese	7439-96-5	SSOLVE	D	3	3	3.30E-02	6.60E-01			2.5E+00	9.1E+03		2.6E-01	7.3E-05	
AOI-26	Zone1	INORG	Mercury	7439-97-6	TOTAL	D	1	1	1.20E-04	1.20E-04			2.0E-03	5.6E-02	4.6E+01	6.0E-02	2.1E-03	2.6E-06
AOI-26	Zone1	INORG	Nickel	7440-02-0	TOTAL	A	1	1	5.60E-03	5.60E-03			1.0E-01	7.4E+04		5.6E-02	7.6E-08	
AOI-26	Zone1	INORG	Nitrate	14797-55-8	TOTAL		3	1	2.00E-01	2.00E-01	2.00E-02	2.00E-02	1.0E+01	3.1E+05		2.0E-02	6.5E-07	
AOI-26	Zone1	INORG	Phosphorous (total)	7723-14-0	TOTAL		3	2	2.00E-02	1.00E-01	2.00E-02	2.00E-02	2.4E+02			4.2E-04		
AOI-26	Zone1	INORG	Potassium	7440-09-7	TOTAL		1	1	2.10E+00	2.10E+00								
AOI-26	Zone1	INORG	Sodium	7440-23-5	TOTAL		1	1	2.61E+02	2.61E+02			3.5E+02	1.0E+06		7.5E-01	2.6E-04	
AOI-26	Zone1	INORG	Vanadium	7440-62-2	TOTAL		1	1	1.40E-03	1.40E-03			6.2E-02	9.7E+02		2.3E-02	1.4E-06	
AOI-26	Zone1	INORG	Zinc	7440-66-6	TOTAL	D	1	1	1.90E+00	1.90E+00			5.0E+00	1.1E+05		3.8E-01	1.7E-05	
AOI-26	Zone2	VOC	Acetone	67-64-1	TOTAL	ID	7	3	6.20E-02	6.90E-01	5.10E-0							

**Table 2-3a: Groundwater Screening Results for On-Site Monitoring Wells**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Well Zone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Groundwater Contact Criteria (mg/L)	Site Specific Industrial GW Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria	Ratio of Max Detected to Groundwater Contact Criteria	Ratio of Max Detected to Site Specific Industrial GW Volatilization to Indoor Air Criteria		
AOI-26	Zone2	INORG	Arsenic	7440-38-2	TOTAL	A	1	1	1.30E-02	1.30E-02			5.0E-02	4.3E+00		2.6E-01	3.0E-03			
AOI-26	Zone2	INORG	Barium	7440-39-3	TOTAL	D	1	1	1.60E-01	1.60E-01			2.0E+00	1.4E+04		8.0E-02	1.1E-05			
AOI-26	Zone2	INORG	Calcium	7440-70-2	TOTAL		1	1	9.96E+01	9.96E+01										
AOI-26	Zone2	INORG	Chromium (total)	7440-47-3	TOTAL		1	1	9.20E-03	9.20E-03			1.0E-01	4.6E+02		9.2E-02	2.0E-05			
AOI-26	Zone2	INORG	Cobalt	7440-48-4	TOTAL	B1	1	1	3.20E-03	3.20E-03			1.0E-01	2.4E+03		3.2E-02	1.3E-06			
AOI-26	Zone2	INORG	Copper	7440-50-8	TOTAL	D	1	1	2.00E-02	2.00E-02			4.0E+00	7.4E+03		5.0E-03	2.7E-06			
AOI-26	Zone2	INORG	Cyanide (total)	57-12-5	TOTAL	D	1	1	2.10E-03	2.10E-03			2.0E-01	5.7E+01		1.1E-02	3.7E-05			
AOI-26	Zone2	INORG	Iron	7439-89-6	TOTAL	D	2	2	5.30E+00	1.02E+01			5.6E+00	5.8E+04		<b>1.8E+00</b>	1.8E-04			
AOI-26	Zone2	INORG	Lead	7439-92-1	TOTAL	B2	1	1	1.90E-02	1.90E-02			4.0E-03			<b>4.8E+00</b>				
AOI-26	Zone2	INORG	Magnesium	7439-95-4	TOTAL		1	1	3.46E+01	3.46E+01			1.1E+03	1.0E+06		3.1E-02	3.5E-05			
AOI-26	Zone2	INORG	Manganese	7439-96-5	TOTAL	D	2	2	1.70E-01	3.60E-01			2.5E+00	9.1E+03		1.4E-01	4.0E-05			
AOI-26	Zone2	INORG	Manganese	7439-96-5	SSOLVE	D	1	1	5.90E-02	5.90E-02			2.5E+00	9.1E+03		2.4E-02	6.5E-06			
AOI-26	Zone2	INORG	Mercury	7439-97-6	TOTAL	D	1	1	2.10E-04	2.10E-04			2.0E-03	5.6E-02	4.6E+01	1.1E-01	3.8E-03	4.6E-06		
AOI-26	Zone2	INORG	Nickel	7440-02-0	TOTAL	A	1	1	1.50E-02	1.50E-02			1.0E-01	7.4E+04		1.5E-01	2.0E-07			
AOI-26	Zone2	INORG	Phosphorous (total)	7723-14-0	TOTAL		1	1	1.00E-01	1.00E-01			2.4E+02			4.2E-04				
AOI-26	Zone2	INORG	Potassium	7440-09-7	TOTAL		1	1	1.30E+01	1.30E+01										
AOI-26	Zone2	INORG	Sodium	7440-23-5	TOTAL		1	1	1.08E+02	1.08E+02			3.5E+02	1.0E+06		3.1E-01	1.1E-04			
AOI-26	Zone2	INORG	Vanadium	7440-62-2	TOTAL		1	1	8.20E-03	8.20E-03			6.2E-02	9.7E+02		1.3E-01	8.5E-06			
AOI-26	Zone2	INORG	Zinc	7440-66-6	TOTAL	D	1	1	2.80E-01	2.80E-01			5.0E+00	1.1E+05		5.6E-02	2.5E-06			
AOI-37	Zone1	VOC	1,1-Dichloroethane	75-34-3	TOTAL	C	1	1	4.10E-01	4.10E-01			2.5E+00	2.4E+03	5.4E+05	1.6E-01	1.7E-04	7.6E-07		
AOI-37	Zone1	VOC	1,1-Dichloroethene	75-35-4	TOTAL	C	1	1	2.90E-01	2.90E-01			7.0E-03	1.1E+01	1.2E+04	<b>4.1E+01</b>	2.6E-02	2.4E-05		
AOI-37	Zone1	VOC	Toluene	108-88-3	TOTAL	D	4	2	4.50E-02	6.50E-02	1.00E-03	1.00E-03	1.0E+00	5.3E+02	4.9E+05	6.5E-02	1.2E-04	1.3E-07		
AOI-37	Zone1	VOC	1,1,1-Trichloroethane	71-55-6	TOTAL	D	1	1	3.10E+00	3.10E+00			2.0E-01	1.3E+03	1.6E+06	<b>1.6E+01</b>	2.4E-03	2.0E-06		
AOI-48	Zone1	VOC	Acetone	67-64-1	TOTAL	ID	7	1	2.30E-01	2.30E-01	5.10E-04	1.10E-03	2.1E+00	3.1E+04	1.6E+08	1.1E-01	7.4E-06	1.5E-09		
AOI-48	Zone1	VOC	Benzene	71-43-2	TOTAL	A	7	2	1.20E-03	4.50E-02	1.60E-04	1.60E-04	5.0E-03	1.1E+01	4.3E+03	<b>9.0E+00</b>	4.1E-03	1.0E-05		
AOI-48	Zone1	VOC	Carbon Tetrachloride	56-23-5	TOTAL	B2	7	1	5.50E-04	5.50E-04	1.20E-04	8.60E-04	5.0E-03	4.6E+00	8.2E+03	1.1E-01	1.2E-04	6.7E-08		
AOI-48	Zone1	VOC	Chloroform	67-66-3	TOTAL	B2	7	1	3.10E-04	3.10E-04	1.40E-04	1.00E-03	1.0E-01	1.5E+02	1.7E+04	3.1E-03	2.1E-06	1.9E-08		
AOI-48	Zone1	VOC	Cumene	98-82-8	TOTAL	D	7	2	1.10E-03	2.50E-02	1.20E-04	1.20E-04	2.3E+00	5.6E+01	6.9E+04	1.1E-02	4.5E-04	3.6E-07		
AOI-48	Zone1	VOC	Cyclohexane	110-82-7	TOTAL	ID	7	2	4.60E-04	5.50E-03	1.30E-04	1.30E-04			3.5E+05			1.6E-08		
AOI-48	Zone1	VOC	1,2-Dichlorobenzene	95-50-1	TOTAL	D	7	2	8.90E-04	2.30E-02	1.10E-04	1.10E-04	6.0E-01	1.6E+02	4.7E+05	3.8E-02	1.4E-04	4.9E-08		
AOI-48	Zone1	VOC	1,4-Dichlorobenzene	106-46-7	TOTAL	C	7	1	3.50E-03	3.50E-03	1.70E-04	3.80E-04	7.5E-02	6.4E+00	1.2E+06	<b>4.7E-02</b>	5.5E-04	3.0E-09		
AOI-48	Zone1	VOC	1,1-Dichloroethane	75-34-3	TOTAL	C	7	1	1.95E-04	1.95E-04	1.60E-04	1.10E-03	2.5E+00	2.4E+03	5.4E+05	7.8E-05	8.1E-08	3.6E-10		
AOI-48	Zone1	VOC	Ethyl Benzene	100-41-4	TOTAL	D	7	2	4.60E-04	2.20E-02	1.20E-04	1.20E-04	7.0E-01	1.7E+02	5.6E+05	3.1E-02	1.3E-04	4.0E-08		
AOI-48	Zone1	VOC	Methylcyclohexane	108-87-2	TOTAL		7	2	6.40E-04	9.40E-03	1.50E-04	1.50E-04			1.5E+06			6.5E-09		
AOI-48	Zone1	VOC	Methylene Chloride	75-09-2	TOTAL	B2	7	1	3.00E-03	3.00E-03	2.90E-04	3.40E-04	5.0E-03	2.2E+02	2.1E+05	6.0E-01	1.4E-05	1.5E-08		
AOI-48	Zone1	VOC	1,1,1-Trichloroethane	71-55-6	TOTAL	D	7	1	1.90E-04	1.90E-04	1.50E-04	1.10E-03	2.0E-01	1.3E+03	1.6E+06	9.5E-04	1.5E-07	1.2E-10		
AOI-48	Zone1	VOC	Xylenes (total)	1330-20-7	TOTAL	ID	7	2	2.90E-03	3.50E-01	3.30E-04	3.30E-04	1.0E+01	1.9E+02	5.7E+05	3.5E-02	1.8E-03	6.2E-07		
AOI-48	Zone1	SVOC	2-Methylnaphthalene	91-57-6	TOTAL	ID	6	1	1.30E-02	1.30E-02	6.40E-04	6.40E-04	7.5E-01	2.5E+01		1.7E-02	5.2E-04			
AOI-48	Zone1	SVOC	Naphthalene	91-20-3	TOTAL	C	6	1	2.60E-02	2.60E-02	7.50E-04	7.50E-04	1.5E+00	3.1E+01	4.7E+05	1.7E-02	8.4E-04	5.6E-08		
AOI-48	Zone1	SVOC	Pentachlorophenol	87-86-5	TOTAL	B2	6	1	2.10E-04	2.10E-04	1.30E-04	5.20E-04	1.0							

**Table 2-3a: Groundwater Screening Results for On-Site Monitoring Wells**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Well Zone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Groundwater Contact Criteria (mg/L)	Site Specific Industrial GW Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria	Ratio of Max Detected to Groundwater Contact Criteria	Ratio of Max Detected to Site Specific Industrial GW Volatilization to Indoor Air Criteria	
AOI-48	Zone1	INORG	Magnesium	7439-95-4	TOTAL		6	6	8.50E+00	4.55E+01			1.1E+03	1.0E+06		4.1E-02	4.5E-05		
AOI-48	Zone1	INORG	Manganese	7439-96-5	TOTAL	D	6	6	1.10E-02	5.70E+00			2.5E+00	9.1E+03		<b>2.3E+00</b>	6.3E-04		
AOI-48	Zone1	INORG	Mercury	7439-97-6	TOTAL	D	6	2	8.80E-05	1.20E-04	8.70E-05	8.70E-05	2.0E-03	5.6E-02	4.6E+01	6.0E-02	2.1E-03	2.6E-06	
AOI-48	Zone1	INORG	Nickel	7440-02-0	TOTAL	A	6	3	7.10E-03	5.10E-02	2.90E-03	2.90E-03	1.0E-01	7.4E+04		5.1E-01	6.9E-07		
AOI-48	Zone1	INORG	Potassium	7440-09-7	TOTAL		6	6	1.70E+00	4.90E+00									
AOI-48	Zone1	INORG	Silver	7440-22-4	TOTAL	D	6	1	1.18E-04	1.18E-04	1.30E-04	1.30E-04	9.8E-02	1.5E+03		1.2E-03	7.8E-08		
AOI-48	Zone1	INORG	Sodium	7440-23-5	TOTAL		6	6	1.62E+01	2.76E+02			3.5E+02	1.0E+06		7.9E-01	2.8E-04		
AOI-48	Zone1	INORG	Thallium	7440-28-0	TOTAL		6	1	8.33E-05	8.33E-05	3.30E-05	3.30E-05	2.0E-03	1.3E+01		4.2E-02	6.4E-06		
AOI-48	Zone1	INORG	Vanadium	7440-62-2	TOTAL		6	4	1.00E-03	3.80E-03	3.40E-04	3.40E-04	6.2E-02	9.7E+02		6.1E-02	3.9E-06		
AOI-48	Zone1	INORG	Zinc	7440-66-6	TOTAL	D	6	5	5.50E-02	1.80E-01	1.40E-02	1.40E-02	5.0E+00	1.1E+05		3.6E-02	1.6E-06		
AOI-48	Zone2	VOC	Benzene	71-43-2	TOTAL	A	6	2	5.00E-04	8.40E-04	1.60E-04	1.80E-03	5.0E-03	1.1E+01	4.3E+03	1.7E-01	7.6E-05	1.9E-07	
AOI-48	Zone2	VOC	cis-1,2-Dichloroethene	156-59-2	TOTAL	D	6	4	6.90E-03	9.10E-02	2.20E-04	3.50E-04	7.0E-02	2.0E+02	1.3E+06	<b>1.3E+00</b>	4.6E-04	7.1E-08	
AOI-48	Zone2	VOC	trans-1,2-Dichloroethene	156-60-5	TOTAL		6	3	2.70E-04	1.30E-03	1.50E-04	1.60E-03	1.0E-01	2.2E+02	7.7E+05		1.3E-02	5.9E-06	1.7E-09
AOI-48	Zone2	VOC	Vinyl Chloride	75-01-4	TOTAL	A	6	4	9.30E-03	1.40E-01	1.50E-04	3.60E-04	2.0E-03	1.0E+00	1.3E+03	<b>7.0E+01</b>	1.4E-01	1.1E-04	
AOI-48	Zone2	INORG	Aluminum	7429-90-5	TOTAL	D	5	4	7.80E-02	2.52E+01	5.70E-02	5.70E-02	4.1E+00	6.4E+04		<b>6.1E+00</b>	3.9E-04		
AOI-48	Zone2	INORG	Arsenic	7440-38-2	TOTAL	A	5	4	2.60E-02	4.50E-02	2.10E-03	2.10E-03	5.0E-02	4.3E+00		9.0E-01	1.0E-02		
AOI-48	Zone2	INORG	Barium	7440-39-3	TOTAL	D	5	5	6.00E-02	7.00E-01			2.0E+00	1.4E+04		3.5E-01	5.0E-05		
AOI-48	Zone2	INORG	Cadmium	7440-43-9	TOTAL	B1	5	3	2.80E-04	3.30E-04	2.80E-04	2.80E-04	5.0E-03	1.9E+02		6.6E-02	1.7E-06		
AOI-48	Zone2	INORG	Calcium	7440-70-2	TOTAL		5	5	8.76E+01	2.56E+02									
AOI-48	Zone2	INORG	Chromium (total)	7440-47-3	TOTAL		5	2	3.10E-03	4.40E-02	1.50E-03	1.50E-03	1.0E-01	4.6E+02		4.4E-01	9.6E-05		
AOI-48	Zone2	INORG	Cobalt	7440-48-4	TOTAL	B1	5	4	1.60E-03	1.90E-02	7.40E-04	7.40E-04	1.0E-01	2.4E+03		1.9E-01	7.9E-06		
AOI-48	Zone2	INORG	Copper	7440-50-8	TOTAL	D	5	3	3.60E-03	3.90E-02	1.70E-03	1.70E-03	4.0E+00	7.4E+03		9.8E-03	5.3E-06		
AOI-48	Zone2	INORG	Iron	7439-89-6	TOTAL	D	5	5	4.50E-02	4.47E+01			5.6E+00	5.8E+04		<b>8.0E+00</b>	7.7E-04		
AOI-48	Zone2	INORG	Lead	7439-92-1	TOTAL	B2	5	1	2.00E-02	2.00E-02	1.60E-03	1.60E-03	4.0E-03			<b>5.0E+00</b>			
AOI-48	Zone2	INORG	Magnesium	7439-95-4	TOTAL		5	5	3.72E+01	1.05E+02			1.1E+03	1.0E+06		9.5E-02	1.1E-04		
AOI-48	Zone2	INORG	Manganese	7439-96-5	TOTAL	D	5	5	2.90E-02	8.90E-01			2.5E+00	9.1E+03		3.6E-01	9.8E-05		
AOI-48	Zone2	INORG	Nickel	7440-02-0	TOTAL	A	5	4	2.90E-03	4.70E-02	2.90E-03	2.90E-03	1.0E-01	7.4E+04		4.7E-01	6.4E-07		
AOI-48	Zone2	INORG	Potassium	7440-09-7	TOTAL		5	4	1.50E+00	9.30E+00	2.30E-02	2.30E-02							
AOI-48	Zone2	INORG	Sodium	7440-23-5	TOTAL		5	5	1.77E+01	7.63E+01			3.5E+02	1.0E+06		2.2E-01	7.6E-05		
AOI-48	Zone2	INORG	Thallium	7440-28-0	TOTAL		5	5	6.20E-05	7.50E-03			2.0E-03	1.3E+01		<b>3.8E+00</b>	5.8E-04		
AOI-48	Zone2	INORG	Vanadium	7440-62-2	TOTAL		5	3	1.80E-03	4.80E-02	3.40E-04	3.40E-04	6.2E-02	9.7E+02		7.7E-01	4.9E-05		
AOI-48	Zone2	INORG	Zinc	7440-66-6	TOTAL	D	5	2	2.30E-01	4.80E-01	1.40E-02	1.40E-02	5.0E+00	1.1E+05		9.6E-02	4.4E-06		
AOI-48 (NW)	Zone1	VOC	Chloroform	67-66-3	TOTAL	B2	4	1	6.10E-04	6.10E-04	1.40E-04	7.00E-02	1.0E-01	1.5E+02	1.7E+04	6.1E-03	4.1E-06	3.7E-08	
AOI-48 (NW)	Zone1	VOC	cis-1,2-Dichloroethene	156-59-2	TOTAL	D	4	1	2.90E-01	2.90E-01	2.20E-04	3.50E-04	7.0E-02	2.0E+02	1.3E+06	<b>4.1E+00</b>	1.5E-03	2.3E-07	
AOI-48 (NW)	Zone1	VOC	Trichloroethene	79-01-6	TOTAL	C-B2	4	1	7.90E+00	7.90E+00	1.40E-04	4.20E-04	5.0E-03	2.2E+01	2.8E+05	<b>1.6E+03</b>	3.6E-01	2.9E-05	
AOI-48 (NW)	Zone1	INORG	Aluminum	7429-90-5	TOTAL	D	1	1	2.30E-01	2.30E-01			4.1E+00	6.4E+04		5.6E-02	3.6E-06		
AOI-48 (NW)	Zone1	INORG	Barium	7440-39-3	TOTAL	D	1	1	2.10E-01	2.10E-01			2.0E+00	1.4E+04		1.1E-01	1.5E-05		
AOI-48 (NW)	Zone1	INORG	Cadmium	7440-43-9	TOTAL	B1	1	1	3.00E-04	3.00E-04			5.0E-03	1.9E+02		6.0E-02	1.6E-06		
AOI-48 (NW)	Zone1	INORG	Calcium	7440-70-2	TOTAL		1	1	1.69E+02	1.69E+02									
AOI-48 (NW)	Zone1	INORG	Cobalt	7440-48-4	TOTAL	B1	1	1	1.40E-03	1.40E-03			1.0E-01	2.4E+03		1.4E-02	5.8E-07		
AOI-48 (NW)	Zone1	INORG	Iron	7439-89-6	TOTAL	D	1	1	1.30E+00										

**Table 2-3a: Groundwater Screening Results for On-Site Monitoring Wells**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Well Zone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Groundwater Contact Criteria (mg/L)	Site Specific Industrial GW Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria	Ratio of Max Detected to Groundwater Contact Criteria	Ratio of Max Detected to Site Specific Industrial GW Volatilization to Indoor Air Criteria
AOI-48 (NW)	Zone1/Zone2	VOC	trans-1,2-Dichloroethene	156-60-5	TOTAL		7	2	7.00E-04	8.20E-04	1.50E-04	6.05E-02	1.0E-01	2.2E+02	7.7E+05	8.2E-03	3.7E-06	1.1E-09
AOI-48 (NW)	Zone1/Zone2	VOC	1,1,1-Trichloroethane	71-55-6	TOTAL	D	7	4	4.40E-04	2.60E-03	3.90E-04	7.15E-02	2.0E-01	1.3E+03	1.6E+06	1.3E-02	2.0E-06	1.7E-09
AOI-48 (NW)	Zone1/Zone2	VOC	Trichloroethene	79-01-6	TOTAL	C-B2	7	5	1.10E-03	4.70E+00	4.20E-04	4.20E-04	5.0E-03	2.2E+01	2.8E+05	<b>9.4E+02</b>	2.1E-01	1.7E-05
AOI-48 (NW)	Zone1/Zone2	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	TOTAL		7	1	3.30E-04	3.30E-04	3.20E-04	5.85E-02	1.7E+02	1.7E+02	2.4E+06	1.9E-06	1.9E-06	1.4E-10
AOI-48 (NW)	Zone1/Zone2	VOC	Vinyl Chloride	75-01-4	TOTAL	A	7	1	5.70E-04	5.70E-04	1.50E-04	6.60E-02	2.0E-03	1.0E+00	1.3E+03	2.9E-01	5.7E-04	4.4E-07
AOI-48 (NW)	Zone1/Zone2	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	TOTAL	B2	3	1	3.50E-03	3.50E-03	2.70E-03	2.70E-03	6.0E-03	3.2E-01	1.6E+08	5.8E-01	1.1E-02	2.2E-11
AOI-48 (NW)	Zone1/Zone2	INORG	Aluminum	7429-90-5	TOTAL	D	3	3	7.10E-02	4.90E+00			4.1E+00	6.4E+04		<b>1.2E+00</b>	7.7E-05	
AOI-48 (NW)	Zone1/Zone2	INORG	Arsenic	7440-38-2	TOTAL	A	3	1	5.40E-03	5.40E-03	2.10E-03	2.10E-03	5.0E-02	4.3E+00		1.1E-01	1.3E-03	
AOI-48 (NW)	Zone1/Zone2	INORG	Barium	7440-39-3	TOTAL	D	3	3	4.00E-02	1.20E-01			2.0E+00	1.4E+04		6.0E-02	8.6E-06	
AOI-48 (NW)	Zone1/Zone2	INORG	Calcium	7440-70-2	TOTAL		3	3	1.05E+02	2.02E+02								
AOI-48 (NW)	Zone1/Zone2	INORG	Chromium (total)	7440-47-3	TOTAL		3	3	2.60E-03	8.20E-03			1.0E-01	4.6E+02		8.2E-02	1.8E-05	
AOI-48 (NW)	Zone1/Zone2	INORG	Cobalt	7440-48-4	TOTAL	B1	3	3	9.00E-04	4.90E-03			1.0E-01	2.4E+03		4.9E-02	2.0E-06	
AOI-48 (NW)	Zone1/Zone2	INORG	Copper	7440-50-8	TOTAL	D	3	1	1.00E-02	1.00E-02	1.70E-03	1.70E-03	4.0E+00	7.4E+03		2.5E-03	1.4E-06	
AOI-48 (NW)	Zone1/Zone2	INORG	Cyanide (total)	57-12-5	TOTAL	D	3	1	4.50E-03	4.50E-03	1.80E-03	1.80E-03	2.0E-01	5.7E+01		2.3E-02	7.9E-05	
AOI-48 (NW)	Zone1/Zone2	INORG	Iron	7439-89-6	TOTAL	D	3	3	9.70E-02	1.00E+01			5.6E+00	5.8E+04		<b>1.8E+00</b>	1.7E-04	
AOI-48 (NW)	Zone1/Zone2	INORG	Lead	7439-92-1	TOTAL	B2	3	1	6.50E-03	6.50E-03	1.60E-03	1.60E-03	4.0E-03			<b>1.6E+00</b>		
AOI-48 (NW)	Zone1/Zone2	INORG	Magnesium	7439-95-4	TOTAL		3	3	2.15E+01	5.83E+01			1.1E+03	1.0E+06		5.3E-02	5.8E-05	
AOI-48 (NW)	Zone1/Zone2	INORG	Manganese	7439-96-5	TOTAL	D	3	3	9.70E-03	4.10E-01			2.5E+00	9.1E+03		1.6E-01	4.5E-05	
AOI-48 (NW)	Zone1/Zone2	INORG	Nickel	7440-02-0	TOTAL	A	3	2	4.30E-03	1.40E-02	2.90E-03	2.90E-03	1.0E-01	7.4E+04		1.4E-01	1.9E-07	
AOI-48 (NW)	Zone1/Zone2	INORG	Potassium	7440-09-7	TOTAL		3	3	4.60E+00	1.52E+01								
AOI-48 (NW)	Zone1/Zone2	INORG	Sodium	7440-23-5	TOTAL		3	3	4.61E+01	8.00E+02			3.5E+02	1.0E+06		<b>2.3E+00</b>	8.0E-04	
AOI-48 (NW)	Zone1/Zone2	INORG	Thallium	7440-28-0	TOTAL		3	1	1.10E-04	1.10E-04	3.30E-05	3.30E-05	2.0E-03	1.3E+01		5.5E-02	8.5E-06	
AOI-48 (NW)	Zone1/Zone2	INORG	Vanadium	7440-62-2	TOTAL		3	2	6.90E-04	1.10E-02	3.40E-04	3.40E-04	6.2E-02	9.7E+02		1.8E-01	1.1E-05	
AOI-48 (NW)	Zone1/Zone2	INORG	Zinc	7440-66-6	TOTAL	D	3	2	2.00E-01	3.00E-01	1.40E-02	1.40E-02	5.0E+00	1.1E+05		6.0E-02	2.7E-06	
AOI-48 (NW)	Zone2	VOC	Acetone	67-64-1	TOTAL	ID	16	1	9.10E-01	9.10E-01	5.10E-04	1.80E+01	2.1E+00	3.1E+04	1.6E+08	4.3E-01	2.9E-05	5.8E-09
AOI-48 (NW)	Zone2	VOC	Benzene	71-43-2	TOTAL	A	16	1	8.30E-03	8.30E-03	1.60E-04	6.20E+00	5.0E-03	1.1E+01	4.3E+03	<b>1.7E+00</b>	7.5E-04	1.9E-06
AOI-48 (NW)	Zone2	VOC	2-Butanone	78-93-3	TOTAL	ID	16	2	2.90E-03	1.50E-02	4.10E-04	9.80E+00	3.8E+01	2.4E+05	3.7E+07	3.9E-04	6.3E-08	4.1E-10
AOI-48 (NW)	Zone2	VOC	Carbon Disulfide	75-15-0	TOTAL		16	2	1.55E-04	2.10E-04	2.00E-04	5.20E+00	2.3E+00	1.2E+03	6.8E+03	9.1E-05	1.8E-07	3.1E-08
AOI-48 (NW)	Zone2	VOC	Carbon Tetrachloride	56-23-5	TOTAL	B2	16	1	5.00E-04	5.00E-04	1.20E-04	6.20E+00	5.0E-03	4.6E+00	8.2E+03	1.0E-01	1.1E-04	6.1E-08
AOI-48 (NW)	Zone2	VOC	Chloroform	67-66-3	TOTAL	B2	16	1	2.80E-03	2.80E-03	1.40E-04	5.80E+00	1.0E-01	1.5E+02	1.7E+04	2.8E-02	1.9E-05	1.7E-07
AOI-48 (NW)	Zone2	VOC	1,1-Dichloroethane	75-34-3	TOTAL	C	16	2	1.10E-01	1.30E-01	1.60E-04	6.50E+00	2.5E+00	2.4E+03	5.4E+05	5.2E-02	5.4E-05	2.4E-07
AOI-48 (NW)	Zone2	VOC	1,1-Dichloroethene	75-35-4	TOTAL	C	16	2	5.40E-03	5.60E-03	2.40E-04	5.50E+00	7.0E-03	1.1E+01	1.2E+04	8.0E-01	5.1E-04	4.7E-07
AOI-48 (NW)	Zone2	VOC	cis-1,2-Dichloroethene	156-59-2	TOTAL	D	16	6	5.80E-04	7.20E-02	2.20E-04	6.20E+00	7.0E-02	2.0E+02	1.3E+06	1.0E+00	3.6E-04	5.6E-08
AOI-48 (NW)	Zone2	VOC	trans-1,2-Dichloroethene	156-60-5	TOTAL		16	5	4.80E-03	7.80E-02	1.50E-04	6.00E+00	1.0E-01	2.2E+02	7.7E+05	7.8E-01	3.5E-04	1.0E-07
AOI-48 (NW)	Zone2	VOC	1,1,1-Trichloroethane	71-55-6	TOTAL	D	16	1	1.60E-04	1.60E-04	1.50E-04	6.50E+00	2.0E-01	1.3E+03	1.6E+06	8.0E-04	1.2E-07	1.0E-10
AOI-48 (NW)	Zone2	VOC	Trichloroethene	79-01-6	TOTAL	C-B2	16	10	3.60E-04	8.50E+02	1.40E-04	7.00E-03	5.0E-03	2.2E+01	2.8E+05	<b>1.7E+05</b>	<b>3.9E+01</b>	3.1E-03
AOI-48 (NW)	Zone2	VOC	Vinyl Chloride	75-01-4	TOTAL	A	16	3	1.58E-04	2.80E-03	1.50E-04	6.50E+00	2.0E-03	1.0E+00	1.3E+03	<b>1.4E+00</b>	2.8E-03	2.1E-06
AOI-48 (NW)	Zone2	SVOC	Diethylphthalate	84-66-2	TOTAL	D	7	1	5.03E-04									

**Table 2-3a: Groundwater Screening Results for On-Site Monitoring Wells**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Well Zone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Groundwater Contact Criteria (mg/L)	Site Specific Industrial GW Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria	Ratio of Max Detected to Groundwater Contact Criteria	Ratio of Max Detected to Site Specific Industrial GW Volatilization to Indoor Air Criteria	
AOI-48 (NW)	Zone2	INORG	Magnesium	7439-95-4	TOTAL	D	7	7	3.23E+01	9.86E+01			1.1E+03	1.0E+06		9.0E-02	9.9E-05		
AOI-48 (NW)	Zone2	INORG	Manganese	7439-96-5	TOTAL	D	7	7	1.20E-01	2.00E+00			2.5E+00	9.1E+03		8.0E-01	2.2E-04		
AOI-48 (NW)	Zone2	INORG	Mercury	7439-97-6	TOTAL	D	7	1	1.20E-04	1.20E-04	8.70E-05	8.70E-05	2.0E-03	5.6E-02	4.6E+01	6.0E-02	2.1E-03	2.6E-06	
AOI-48 (NW)	Zone2	INORG	Nickel	7440-02-0	TOTAL	A	7	7	3.40E-03	2.00E-02			1.0E-01	7.4E+04		2.0E-01	2.7E-07		
AOI-48 (NW)	Zone2	INORG	Potassium	7440-09-7	TOTAL		7	7	2.10E+00	1.97E+02									
AOI-48 (NW)	Zone2	INORG	Silver	7440-22-4	TOTAL	D	7	1	1.50E-04	1.50E-04	1.30E-04	1.30E-04	9.8E-02	1.5E+03		1.5E-03	1.0E-07		
AOI-48 (NW)	Zone2	INORG	Sodium	7440-23-5	TOTAL		7	7	3.24E+01	5.73E+02			3.5E+02	1.0E+06		1.6E+00	5.7E-04		
AOI-48 (NW)	Zone2	INORG	Thallium	7440-28-0	TOTAL		7	6	2.58E-05	1.00E-04	3.30E-05	3.30E-05	2.0E-03	1.3E+01		5.0E-02	7.7E-06		
AOI-48 (NW)	Zone2	INORG	Vanadium	7440-62-2	TOTAL		7	6	2.70E-03	1.70E-02	3.40E-04	3.40E-04	6.2E-02	9.7E+02		2.7E-01	1.8E-05		
AOI-48 (NW)	Zone2	INORG	Zinc	7440-66-6	TOTAL	D	7	3	1.40E-01	5.20E-01	1.40E-02	1.40E-02	5.0E+00	1.1E+05		1.0E-01	4.7E-06		
AOI-48(SE)/Blg 4111	Zone1	VOC	Acetone	67-64-1	TOTAL	ID	2	1	8.25E-01	8.25E-01	7.90E-01	7.90E-01	2.1E+00	3.1E+04	1.6E+08	3.9E-01	2.7E-05	5.3E-09	
AOI-48(SE)/Blg 4111	Zone1	VOC	Carbon Tetrachloride	56-23-5	TOTAL	B2	2	2	6.10E+00	2.65E+01			5.0E-03	4.6E+00	8.2E+03	5.3E+03	5.8E+00	3.2E-03	
AOI-48(SE)/Blg 4111	Zone1	VOC	Chloroform	67-66-3	TOTAL	B2	2	2	4.70E-01	8.55E-01			1.0E-01	1.5E+02	1.7E+04	8.6E+00	5.7E-03	5.1E-05	
AOI-48(SE)/Blg 4111	Zone1	VOC	cis-1,2-Dichloroethene	156-59-2	TOTAL	D	2	1	4.30E+00	4.30E+00	3.50E-01	3.50E-01	7.0E-02	2.0E+02	1.3E+06	6.1E+01	2.2E-02	3.4E-06	
AOI-48(SE)/Blg 4111	Zone1	VOC	trans-1,2-Dichloroethene	156-60-5	TOTAL		2	1	2.40E-01	2.40E-01	3.30E-01	3.30E-01	1.0E-01	2.2E+02	7.7E+05	2.4E+00	1.1E-03	3.1E-07	
AOI-48(SE)/Blg 4111	Zone1	VOC	Trichloroethene	79-01-6	TOTAL	C-B2	2	2	1.95E+01	2.20E+01			5.0E-03	2.2E+01	2.8E+05	4.4E+03	1.0E+00	8.0E-05	
AOI-49	Zone1	VOC	Benzene	71-43-2	TOTAL	A	5	1	1.80E-02	1.80E-02	3.70E-04	2.80E-02	5.0E-03	1.1E+01	4.3E+03	3.6E+00	1.6E-03	4.1E-06	
AOI-49	Zone1	VOC	Chloroethane	75-00-3	TOTAL		5	1	2.40E-03	2.40E-03	2.90E-04	2.40E-02	1.7E+00	4.4E+02	7.6E+06	1.4E-03	5.5E-06	3.2E-10	
AOI-49	Zone1	VOC	Cyclohexane	110-82-7	TOTAL	ID	5	1	3.30E-02	3.30E-02	3.30E-04	2.50E-02			3.5E+05			9.3E-08	
AOI-49	Zone1	VOC	1,1-Dichloroethane	75-34-3	TOTAL	C	5	4	5.40E-02	3.05E+00	3.00E-04	3.00E-04	2.5E+00	2.4E+03	5.4E+05	1.2E+00	1.3E-03	5.6E-06	
AOI-49	Zone1	VOC	1,2-Dichloroethane	107-06-2	TOTAL	B2	5	1	3.20E-02	3.20E-02	2.80E-04	2.20E-02	5.0E-03	1.9E+01	1.8E+04	6.4E+00	1.7E-03	1.7E-06	
AOI-49	Zone1	VOC	1,1-Dichloroethene	75-35-4	TOTAL	C	5	4	1.20E-02	2.20E-01	3.10E-04	3.10E-04	7.0E-03	1.1E+01	1.2E+04	3.1E+01	2.0E-02	1.8E-05	
AOI-49	Zone1	VOC	cis-1,2-Dichloroethene	156-59-2	TOTAL	D	5	4	1.11E-01	1.90E-01	3.50E-04	3.50E-04	7.0E-02	2.0E+02	1.3E+06	2.7E+00	9.5E-04	1.5E-07	
AOI-49	Zone1	VOC	trans-1,2-Dichloroethene	156-60-5	TOTAL		5	2	4.80E-03	5.20E-03	3.30E-04	2.50E-02	1.0E-01	2.2E+02	7.7E+05	5.2E-02	2.4E-05	6.8E-09	
AOI-49	Zone1	VOC	Ethyl Benzene	100-41-4	TOTAL	D	5	1	8.60E-02	8.60E-02	4.10E-04	3.20E-02	7.0E-01	1.7E+02	5.6E+05	1.2E-01	5.1E-04	1.5E-07	
AOI-49	Zone1	VOC	Methylcyclohexane	108-87-2	TOTAL		5	1	3.10E-02	3.10E-02	4.20E-04	3.20E-02			1.5E+06			2.1E-08	
AOI-49	Zone1	VOC	Methylene Chloride	75-09-2	TOTAL	B2	5	1	2.90E-02	2.90E-02	2.90E-04	2.20E-02	5.0E-03	2.2E+02	2.1E+05	5.8E+00	1.3E-04	1.4E-07	
AOI-49	Zone1	VOC	1,1,1-Trichloroethane	71-55-6	TOTAL	D	5	3	1.80E-02	1.90E+00	3.90E-04	2.60E-03	2.0E-01	1.3E+03	1.6E+06	9.5E+00	1.5E-03	1.2E-06	
AOI-49	Zone1	VOC	Trichloroethene	79-01-6	TOTAL	C-B2	5	2	3.40E-02	6.90E-02	4.20E-04	3.20E-02	5.0E-03	2.2E+01	2.8E+05	1.4E+01	3.1E-03	2.5E-07	
AOI-49	Zone1	VOC	Vinyl Chloride	75-01-4	TOTAL	A	5	1	8.90E-02	8.90E-02	3.60E-04	2.80E-02	2.0E-03	1.0E+00	1.3E+03	4.5E+01	8.9E-02	6.8E-05	
AOI-49	Zone1	VOC	Xylenes (total)	1330-20-7	TOTAL	ID	5	1	2.40E-02	2.40E-02	4.40E-04	3.40E-02	1.0E+01	1.9E+02	5.7E+05	2.4E-03	1.3E-04	4.2E-08	
AOI-49	Zone1	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	TOTAL	B2	1	1	2.08E-03	2.08E-03			6.0E-03	3.2E-01	1.6E+08	3.5E-01	6.5E-03	1.3E-11	
AOI-49	Zone1	INORG	Aluminum	7429-90-5	TOTAL	D	1	1	2.30E+00	2.30E+00			4.1E+00	6.4E+04		5.6E-01	3.6E-05		
AOI-49	Zone1	INORG	Arsenic	7440-38-2	TOTAL	A	1	1	1.30E-02	1.30E-02			5.0E-02	4.3E+00		2.6E-01	3.0E-03		
AOI-49	Zone1	INORG	Barium	7440-39-3	TOTAL	D	1	1	2.10E-01	2.10E-01			2.0E+00	1.4E+04		1.1E-01	1.5E-05		
AOI-49	Zone1	INORG	Cadmium	7440-43-9	TOTAL	B1	1	1	4.55E-04	4.55E-04			5.0E-03	1.9E+02		9.1E-02	2.4E-06		
AOI-49	Zone1	INORG	Calcium	7440-70-2	TOTAL		1	1	1.10E+02	1.10E+02									
AOI-49	Zone1	INORG	Chromium III	16065-83-1	TOTAL	D	1	1	2.40E-03	2.40E-03			1.1E+02	2.9E+05		2.2E-05	8.3E-09		
AOI-49	Zone1	INORG	Cobalt	7440-48-4	TOTAL	B1	1	1	1.70E-02	1.70E-02</									

**Table 2-3a: Groundwater Screening Results for On-Site Monitoring Wells**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Well Zone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Groundwater Contact Criteria (mg/L)	Site Specific Industrial GW Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria	Ratio of Max Detected to Groundwater Contact Criteria	Ratio of Max Detected to Site Specific Industrial GW Volatilization to Indoor Air Criteria	
AOI-49	Zone2	VOC	Vinyl Chloride	75-01-4	TOTAL	A	2	2	2.20E-03	5.30E-03			2.0E-03	1.0E+00	1.3E+03	<b>2.7E+00</b>	5.3E-03	4.0E-06	
AOI-49	Zone2	INORG	Aluminum	7429-90-5	TOTAL	D	1	1	1.20E+00	1.20E+00			4.1E+00	6.4E+04		2.9E-01	1.9E-05		
AOI-49	Zone2	INORG	Arsenic	7440-38-2	TOTAL	A	1	1	2.60E-03	2.60E-03			5.0E-02	4.3E+00		5.2E-02	6.0E-04		
AOI-49	Zone2	INORG	Barium	7440-39-3	TOTAL	D	1	1	1.20E-01	1.20E-01			2.0E+00	1.4E+04		6.0E-02	8.6E-06		
AOI-49	Zone2	INORG	Calcium	7440-70-2	TOTAL		1	1	7.74E+01	7.74E+01									
AOI-49	Zone2	INORG	Chromium III	16065-83-1	TOTAL	D	1	1	2.50E-03	2.50E-03			1.1E+02	2.9E+05		2.3E-05	8.6E-09		
AOI-49	Zone2	INORG	Cobalt	7440-48-4	TOTAL	B1	1	1	1.80E-03	1.80E-03			1.0E-01	2.4E+03		1.8E-02	7.5E-07		
AOI-49	Zone2	INORG	Iron	7439-89-6	TOTAL	D	1	1	3.40E+00	3.40E+00			5.6E+00	5.8E+04		6.1E-01	5.9E-05		
AOI-49	Zone2	INORG	Magnesium	7439-95-4	TOTAL		1	1	4.38E+01	4.38E+01			1.1E+03	1.0E+06		4.0E-02	4.4E-05		
AOI-49	Zone2	INORG	Manganese	7439-96-5	TOTAL	D	1	1	7.40E-02	7.40E-02			2.5E+00	9.1E+03		3.0E-02	8.1E-06		
AOI-49	Zone2	INORG	Nickel	7440-02-0	TOTAL	A	1	1	3.90E-03	3.90E-03			1.0E-01	7.4E+04		3.9E-02	5.3E-08		
AOI-49	Zone2	INORG	Potassium	7440-09-7	TOTAL		1	1	6.20E+00	6.20E+00									
AOI-49	Zone2	INORG	Sodium	7440-23-5	TOTAL		1	1	9.24E+01	9.24E+01			3.5E+02	1.0E+06		2.6E-01	9.2E-05		
AOI-49	Zone2	INORG	Vanadium	7440-62-2	TOTAL		1	1	2.60E-03	2.60E-03			6.2E-02	9.7E+02		4.2E-02	2.7E-06		
AOI-50	Zone1	VOC	Benzene	71-43-2	TOTAL	A	5	2	7.40E-04	2.00E-01	7.40E-04	5.30E-03	5.0E-03	1.1E+01	4.3E+03	<b>4.0E+01</b>	1.8E-02	4.6E-05	
AOI-50	Zone1	VOC	Chloroethane	75-00-3	TOTAL		5	2	7.60E-04	1.60E-03	5.80E-04	5.80E-02	1.7E+00	4.4E+02	7.6E+06	9.4E-04	3.6E-06	2.1E-10	
AOI-50	Zone1	VOC	Chloroform	67-66-3	TOTAL	B2	5	1	5.60E-03	5.60E-03	7.00E-04	7.00E-02	1.0E-01	1.5E+02	1.7E+04	5.6E-02	3.7E-05	3.4E-07	
AOI-50	Zone1	VOC	1,1-Dichloroethane	75-34-3	TOTAL	C	5	5	5.50E-02	6.10E+00			2.5E+00	2.4E+03	5.4E+05	<b>2.4E+00</b>	2.5E-03	1.1E-05	
AOI-50	Zone1	VOC	1,1-Dichloroethene	75-35-4	TOTAL	C	5	5	2.90E-02	6.30E+00			7.0E-03	1.1E+01	1.2E+04	<b>9.0E+02</b>	5.7E-01	5.3E-04	
AOI-50	Zone1	VOC	cis-1,2-Dichloroethene	156-59-2	TOTAL	D	5	5	5.40E-02	8.00E+00			7.0E-02	2.0E+02	1.3E+06	<b>1.1E+02</b>	4.0E-02	6.3E-06	
AOI-50	Zone1	VOC	trans-1,2-Dichloroethene	156-60-5	TOTAL		5	5	3.10E-03	1.00E-01			1.0E-01	2.2E+02	7.7E+05	1.0E+00	4.5E-04	1.3E-07	
AOI-50	Zone1	VOC	1,1,1-Trichloroethane	71-55-6	TOTAL	D	5	3	9.40E-03	2.60E-01	7.80E-04	7.80E-04	2.0E-01	1.3E+03	1.6E+06	<b>1.3E+00</b>	2.0E-04	1.7E-07	
AOI-50	Zone1	VOC	Trichloroethene	79-01-6	TOTAL	C-B2	5	3	3.70E-02	2.20E-01	8.40E-04	8.40E-04	5.0E-03	2.2E+01	2.8E+05	<b>4.4E+01</b>	1.0E-02	8.0E-07	
AOI-50	Zone1	VOC	Vinyl Chloride	75-01-4	TOTAL	A	5	5	3.20E-03	1.50E+00			2.0E-03	1.0E+00	1.3E+03	<b>7.5E+02</b>	<b>1.5E+00</b>	1.1E-03	
AOI-50	Zone1	SVOC	Caprolactam	105-60-2	TOTAL		5	4	1.80E-03	8.80E-02	4.50E-04	4.50E-04	1.7E+01	3.9E+05		5.2E-03	2.3E-07		
AOI-50	Zone1	SVOC	Di-n-butylphthalate	84-74-2	TOTAL	D	5	1	4.30E-04	4.30E-04	3.70E-04	3.70E-04	2.5E+00	1.1E+01	1.4E+09	1.7E-04	3.9E-05	3.0E-13	
AOI-50	Zone2	VOC	Chloroform	67-66-3	TOTAL	B2	1	1	5.60E-04	5.60E-04			1.0E-01	1.5E+02	1.7E+04	5.6E-03	3.7E-06	3.4E-08	
AOI-50	Zone2	VOC	1,1-Dichloroethane	75-34-3	TOTAL	C	1	1	8.70E-04	8.70E-04			2.5E+00	2.4E+03	5.4E+05	3.5E-04	3.6E-07	1.6E-09	
AOI-50	Zone2	VOC	cis-1,2-Dichloroethene	156-59-2	TOTAL	D	1	1	1.80E-03	1.80E-03			7.0E-02	2.0E+02	1.3E+06	2.6E-02	9.0E-06	1.4E-09	
AOI-50	Zone2	VOC	Toluene	108-88-3	TOTAL	D	1	1	3.10E-04	3.10E-04			1.0E+00	5.3E+02	4.9E+05	3.1E-04	5.8E-07	6.4E-10	
AOI-50	Zone2	VOC	1,1,1-Trichloroethane	71-55-6	TOTAL	D	1	1	5.10E-04	5.10E-04			2.0E-01	1.3E+03	1.6E+06	2.6E-03	3.9E-07	3.3E-10	
AOI-50	Zone2	VOC	Trichloroethene	79-01-6	TOTAL	C-B2	1	1	1.10E-03	1.10E-03			5.0E-03	2.2E+01	2.8E+05	2.2E-01	5.0E-05	4.0E-09	
AOI-50	Zone2	INORG	Aluminum	7429-90-5	TOTAL	D	1	1	5.60E-01	5.60E-01			4.1E+00	6.4E+04		1.4E-01	8.8E-06		
AOI-50	Zone2	INORG	Arsenic	7440-38-2	TOTAL	A	1	1	2.80E-02	2.80E-02			5.0E-02	4.3E+00		5.6E-01	6.5E-03		
AOI-50	Zone2	INORG	Barium	7440-39-3	TOTAL	D	1	1	6.90E-02	6.90E-02			2.0E+00	1.4E+04		3.5E-02	4.9E-06		
AOI-50	Zone2	INORG	Calcium	7440-70-2	TOTAL		1	1	4.30E+01	4.30E+01									
AOI-50	Zone2	INORG	Chromium (total)	7440-47-3	TOTAL		1	1	2.10E-03	2.10E-03			1.0E-01	4.6E+02		2.1E-02	4.6E-06		
AOI-50	Zone2	INORG	Iron	7439-89-6	TOTAL	D	1	1	6.20E-01	6.20E-01			5.6E+00	5.8E+04		1.1E-01	1.1E-05		
AOI-50	Zone2	INORG	Magnesium	7439-95-4	TOTAL		1	1	7.90E+00	7.90E+00			1.1E+03	1.0E+06		7.2E-03	7.9E-06		
AOI-50	Zone2	INORG	Manganese	7439-96-5	TOTAL	D	1	1	1.30E-02	1.30E-02			2.5E+00	9.1E+03		5.2E-03	1.4E-06		
AOI-50	Zone2	INORG	Potassium	7440-09-7	TOTAL		1	1</											

**Table 2-3a: Groundwater Screening Results for On-Site Monitoring Wells  
Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Well Zone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Groundwater Contact Criteria (mg/L)	Site Specific Industrial GW Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria	Ratio of Max Detected to Groundwater Contact Criteria	Ratio of Max Detected to Site Specific Industrial GW Volatilization to Indoor Air Criteria
			<b>Notes (continued):</b>															
			The Screening Criteria for Chromium VI is used as a surrogate for Chromium (total).															
			The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria.															
			The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.															
			The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.															
			The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.															
			The toxicity values that MDEQ used to calculate its screening criteria for 1,1-Dichloroethene (1,1-DCE) are different from the toxicity values for 1,1-DCE published in IRIS (January, 2003). The updated screening criteria for 1,1-DCE, based on IRIS toxicity values, are: 1.04 mg/L (industrial drinking water), 797 mg/L (groundwater contact), 188 mg/L (industrial groundwater volatilization to indoor air).															
			The first (shallow) saturated zone beneath the Facility (depth to groundwater of 4 - 16 ft) is called "Zone 1," except in the northwest corner of the property, where "Zone 1" is absent.															
			In the northwest corner of the property, there is only one water-bearing zone identified, and water levels in the area are consistent with "Zone 2" (see below). In this area, the upper half of the first and only saturated zone encountered is identified as "Zone1/Zone2," and the lower half is identified as "Zone 2."															
			The second (deeper) saturated zone beneath the Facility (depth to groundwater of 15 - 25 ft) is called "Zone 2."															
			Chem Group - Chemical Group															
			Meas Basis - Measured Basis; T = Total, D = Dissolved															
			Carc Class - EPA Weight-of-Evidence Cancer Classification															
			A = Known Human Carcinogen-sufficient evidence of carcinogenicity in humans; B1 = Human Carcinogen-limited evidence of carcinogenicity in humans;															
			B2 = Probable Human Carcinogen-sufficient evidence of carcinogenicity in animals with inadequate or lack of evidence in humans; C = Possible Human Carcinogen-limited evidence of carcinogenicity in animals and inadequate or lack of evidence in humans; D = Not classifiable as to human carcinogenicity;															
			ID = Data Are Inadequate for An Assessment of Human Carcinogenic Potential															
			Min QL - Minimum Quantitation Limit															
			Max QL - Maximum Quantitation Limit															

**Table 2-3b: Groundwater Screening Results for Off-Site Monitoring Wells**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Well Zone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Groundwater Contact Criteria (mg/L)	Site Specific Residential GW Volatilization to Indoor Air Criteria	Ratio of Max Detected to Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Site Specific Residential GW Volatilization to Indoor Air Criteria
AOI-48	Zone1	INORG	Aluminum	7429-90-5	TOTAL	D	1	1	5.10E+00	5.10E+00			3.0E-01	6.4E+04		<b>1.7E+01</b>	8.0E-05	
AOI-48	Zone1	INORG	Arsenic	7440-38-2	TOTAL	A	1	1	3.00E-03	3.00E-03			5.0E-02	4.3E+00		<b>6.0E-02</b>	7.0E-04	
AOI-48	Zone1	INORG	Barium	7440-39-3	TOTAL	D	1	1	6.00E-02	6.00E-02			2.0E+00	1.4E+04		<b>3.0E-02</b>	4.3E-06	
AOI-48	Zone1	INORG	Chromium (total)	7440-47-3	TOTAL		1	1	7.10E-03	7.10E-03			1.0E-01	4.6E+02		<b>7.1E-02</b>	1.5E-05	
AOI-48	Zone1	INORG	Cobalt	7440-48-4	TOTAL	B1	1	1	3.20E-03	3.20E-03			4.0E-02	2.4E+03		<b>8.0E-02</b>	1.3E-06	
AOI-48	Zone1	INORG	Copper	7440-50-8	TOTAL	D	1	1	1.30E-02	1.30E-02			1.4E+00	7.4E+03		<b>9.3E-03</b>	1.8E-06	
AOI-48	Zone1	INORG	Iron	7439-89-6	TOTAL	D	1	1	6.60E+00	6.60E+00			2.0E+00	5.8E+04		<b>3.3E+00</b>	1.1E-04	
AOI-48	Zone1	INORG	Lead	7439-92-1	TOTAL	B2	1	1	6.50E-03	6.50E-03			4.0E-03			<b>1.6E+00</b>		
AOI-48	Zone1	INORG	Magnesium	7439-95-4	TOTAL		1	1	1.62E+01	1.62E+01			4.0E+02	1.0E+06		<b>4.1E-02</b>	1.6E-05	
AOI-48	Zone1	INORG	Manganese	7439-96-5	TOTAL	D	1	1	6.40E-01	6.40E-01			8.6E-01	9.1E+03		<b>7.4E-01</b>	7.0E-05	
AOI-48	Zone1	INORG	Mercury	7439-97-6	TOTAL	D	1	1	1.30E-04	1.30E-04			2.0E-03	5.6E-02	4.0E-01	<b>6.5E-02</b>	2.3E-03	<b>3.3E-04</b>
AOI-48	Zone1	INORG	Nickel	7440-02-0	TOTAL	A	1	1	1.00E-02	1.00E-02			1.0E-01	7.4E+04		<b>1.0E-01</b>	1.4E-07	
AOI-48	Zone1	INORG	Sodium	7440-23-5	TOTAL		1	1	2.18E+02	2.18E+02			1.2E+02	1.0E+06		<b>1.8E+00</b>	2.2E-04	
AOI-48	Zone1	INORG	Vanadium	7440-62-2	TOTAL		1	1	9.70E-03	9.70E-03			4.5E-03	9.7E+02		<b>2.2E+00</b>	1.0E-05	
AOI-48	Zone1	INORG	Zinc	7440-66-6	TOTAL	D	1	1	1.10E-01	1.10E-01			2.4E+00	1.1E+05		<b>4.6E-02</b>	1.0E-06	
AOI-48	Zone2	INORG	Aluminum	7429-90-5	TOTAL	D	1	1	8.70E-02	8.70E-02			3.0E-01	6.4E+04		<b>2.9E-01</b>	1.4E-06	
AOI-48	Zone2	INORG	Barium	7440-39-3	TOTAL	D	1	1	4.70E-02	4.70E-02			2.0E+00	1.4E+04		<b>2.4E-02</b>	3.4E-06	
AOI-48	Zone2	INORG	Cobalt	7440-48-4	TOTAL	B1	1	1	1.30E-03	1.30E-03			4.0E-02	2.4E+03		<b>3.3E-02</b>	5.4E-07	
AOI-48	Zone2	INORG	Iron	7439-89-6	TOTAL	D	1	1	6.90E-01	6.90E-01			2.0E+00	5.8E+04		<b>3.5E-01</b>	1.2E-05	
AOI-48	Zone2	INORG	Magnesium	7439-95-4	TOTAL		1	1	6.70E+01	6.70E+01			4.0E+02	1.0E+06		<b>1.7E-01</b>	6.7E-05	
AOI-48	Zone2	INORG	Manganese	7439-96-5	TOTAL	D	1	1	3.40E-01	3.40E-01			8.6E-01	9.1E+03		<b>4.0E-01</b>	3.7E-05	
AOI-48	Zone2	INORG	Sodium	7440-23-5	TOTAL		1	1	1.61E+02	1.61E+02			1.2E+02	1.0E+06		<b>1.3E+00</b>	1.6E-04	
AOI-48	Zone2	INORG	Thallium	7440-28-0	TOTAL		1	1	1.40E-04	1.40E-04			2.0E-03	1.3E+01		<b>7.0E-02</b>	1.1E-05	
AOI-48	Zone2	INORG	Zinc	7440-66-6	TOTAL	D	1	1	1.90E-01	1.90E-01			2.4E+00	1.1E+05		<b>7.9E-02</b>	1.7E-06	
AOI-48 (NW)	Zone1	VOC	cis-1,2-Dichloroethene	156-59-2	TOTAL	D	3	1	8.30E-02	8.30E-02	3.50E-04	3.50E-04	7.0E-02	2.0E+02	4.9E+01	<b>1.2E+00</b>	4.2E-04	1.7E-03
AOI-48 (NW)	Zone1	VOC	trans-1,2-Dichloroethene	156-60-5	TOTAL		3	1	1.20E-03	1.20E-03	3.30E-04	3.30E-04	1.0E-01	2.2E+02	5.3E+01	<b>1.2E-02</b>	5.5E-06	2.2E-05
AOI-48 (NW)	Zone1	VOC	Trichloroethene	79-01-6	TOTAL	C-B2	3	1	4.20E-02	4.20E-02	4.20E-04	4.20E-04	5.0E-03	2.2E+01	1.1E+01	<b>8.4E+00</b>	1.9E-03	3.9E-03
AOI-48 (NW)	Zone1	VOC	Vinyl Chloride	75-01-4	TOTAL	A	3	1	2.00E-03	2.00E-03	3.60E-04	3.60E-04	2.0E-03	1.0E+00	1.0E+00	<b>1.0E+00</b>	2.0E-03	2.0E-03
AOI-48 (NW)	Zone1/Zone2	VOC	Chloroform	67-66-3	TOTAL	B2	2	1	4.60E-04	4.60E-04	3.50E-04	3.50E-04	1.0E-01	1.5E+02	1.5E+00	<b>4.6E-03</b>	3.1E-06	3.0E-04
AOI-48 (NW)	Zone1/Zone2	VOC	Trichloroethene	79-01-6	TOTAL	C-B2	2	1	4.80E-03	4.80E-03	4.20E-04	4.20E-04	5.0E-03	2.2E+01	1.1E+01	<b>9.6E-01</b>	2.2E-04	4.4E-04
AOI-48 (NW)	Zone2	VOC	cis-1,2-Dichloroethene	156-59-2	TOTAL	D	7	1	9.00E-03	9.00E-03	3.50E-04	3.50E-04	7.0E-02	2.0E+02	4.9E+01	<b>1.3E-01</b>	4.5E-05	1.9E-04
AOI-48 (NW)	Zone2	VOC	Trichloroethene	79-01-6	TOTAL	C-B2	7	1	5.10E-01	5.10E-01	4.20E-04	4.20E-04	5.0E-03	2.2E+01	1.1E+01	<b>1.0E+02</b>	2.3E-02	4.7E-02
AOI-48 (NW)	Zone2	INORG	Aluminum	7429-90-5	TOTAL	D	2	2	1.60E+00	6.70E+00			3.0E-01	6.4E+04		<b>2.2E+01</b>	1.0E-04	
AOI-48 (NW)	Zone2	INORG	Arsenic	7440-38-2	TOTAL	A	2	2	1.80E-02	3.10E-02			5.0E-02	4.3E+00		<b>6.2E-01</b>	7.2E-03	
AOI-48 (NW)	Zone2	INORG	Barium	7440-39-3	TOTAL	D	2	2	2.10E-01	4.20E-01			2.0E+00	1.4E+04		<b>2.1E-01</b>	3.0E-05	
AOI-48 (NW)	Zone2	INORG	Cadmium	7440-43-9	TOTAL	B1	2	1	4.40E-04	4.40E-04	2.80E-04	2.80E-04	5.0E-03	1.9E+02		<b>8.8E-02</b>	2.3E-06	
AOI-48 (NW)	Zone2	INORG	Chromium (total)	7440-47-3	TOTAL		2	2	2.80E-03	1.00E-02			1.0E-01	4.6E+02		<b>1.0E-01</b>	2.2E-05	
AOI-48 (NW)	Zone2	INORG	Cobalt	7440-48-4	TOTAL	B1	2	2	1.70E-03	3.00E-03			4.0E-02	2.4E+03		<b>7.5E-02</b>	1.3E-06	
AOI-48 (NW)	Zone2	INORG	Copper	7440-50-8	TOTAL	D	2	1	4.80E-03	4.80E-03	1.70E-03	1.70E-03	1.4E+00	7.4E+03		<b>3.4E-03</b>	6.5E-07	
AOI-48 (NW)	Zone2	INORG	Iron	7439-89-6	TOTAL	D	2	2	2.70E+00	9.10E+00			2.0E+00	5.8E+04		<b>4.6E+00</b>	1.6E-04	
AOI-48 (NW)	Zone2	INORG</td																

**Table 2-3b: Groundwater Screening Results for Off-Site Monitoring Wells  
Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Well Zone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Groundwater Contact Criteria (mg/L)	Site Specific Residential GW Volatilization to Indoor Air Criteria	Ratio of Max Detected to Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Site Specific Residential GW Volatilization to Indoor Air Criteria	
			<b>Notes:</b>																
			The Screening Criteria are MDEQ Part 201 Generic Cleanup Criteria (MDEQ 2002) or site-specific industrial criteria for the indoor air pathway .																
			Duplicate results have been averaged.																
			Only chemicals detected at an AOI are shown.																
			The Screening Criteria for Chromium VI is used as a surrogate for Chromium (total).																
			The first (shallow) saturated zone beneath the Facility (depth to groundwater of 4 - 16 ft) is called "Zone 1," except in the northwest corner of the property, where "Zone 1" is absent.																
			In the northwest corner of the property, there is only one water-bearing zone identified, and water levels in the area are consistent with "Zone 2" (see below). In this area, the upper half of the first and only saturated zone encountered is identified as "Zone1/Zone2," and the lower half is identified as "Zone 2."																
			The second (deeper) saturated zone beneath the Facility (depth to groundwater of 15 - 25 ft) is called "Zone 2."																
			Chem Group - Chemical Group																
			Meas Basis - Measured Basis; T = Total, D = Dissolved																
			Carc Class - EPA Weight-of-Evidence Cancer Classification																
			A = Known Human Carcinogen-sufficient evidence of carcinogenicity in humans; B1 = Human Carcinogen-limited evidence of carcinogenicity in humans;																
			B2 = Probable Human Carcinogen-sufficient evidence of carcinogenicity in animals with inadequate or lack of evidence in humans; C = Possible Human Carcinogen-limited evidence of carcinogenicity in animals and inadequate or lack of evidence in humans; D = Not classifiable as to human carcinogenicity;																
			ID = Data Are Inadequate for An Assessment of Human Carcinogenic Potential																
			Min QL - Minimum Quantitation Limit																
			Max QL - Maximum Quantitation Limit																

**Table 2-3c: Groundwater Samples Exceeding Screening Criteria for On-Site Monitoring Wells**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

AOI	Well Zone	Location	Sample ID	Sample Date	Meas Basis	Chem Group	Chemical	CASRN	Conc (mg/L)	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detect to Industrial Drinking Water Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Site Specific Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detect to Site Specific Industrial Groundwater Volatilization to Indoor Air Criteria
AOI-08	Zone1	MW-4640S	640S-060503-1005DL	6/5/2003	TOTAL	INORG	Chromium VI	18540-29-9	7.00E+00	1.0E-01	7.0E+01	4.6E+02	1.5E-02		
AOI-11	Zone1	MW-4003	4003-052103-1545	5/21/2003	TOTAL	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	6.40E-03	6.0E-03	1.1E+00	3.2E-01	2.0E-02	1.6E+08	4.1E-11
AOI-11	Zone1	MW-4005	4005-052103-1245	5/21/2003	TOTAL	INORG	Lead	7439-92-1	6.00E-02	4.0E-03	1.5E+01				
AOI-11	Zone1	MW-4005	4005-052103-1245DL	5/21/2003	TOTAL	SVOC	Benzo(a)pyrene	50-32-8	1.30E-02	5.0E-03	2.6E+00	2.0E-03	6.5E+00		
AOI-11	Zone1	MW-4005	4005-052103-1245DL	5/21/2003	TOTAL	SVOC	Benzo(b)fluoranthene	205-99-2	2.20E-02	2.0E-03	1.1E+01	2.0E-03	1.1E+01		
AOI-11	Zone1	MW-4005	4005-052103-1245DL	5/21/2003	TOTAL	SVOC	Benzo(g,h,i)perylene	191-24-2	1.10E-02	5.0E-03	2.2E+00	5.0E-03	2.2E+00		
AOI-11	Zone1	MW-4005	4005-052103-1245DL	5/21/2003	TOTAL	SVOC	Benzo(k)fluoranthene	207-08-9	1.30E-02	5.0E-03	2.6E+00	5.0E-03	2.6E+00		
AOI-11	Zone1	MW-4005	4005-052103-1245DL	5/21/2003	TOTAL	SVOC	Chrysene	218-01-9	1.90E-02	5.0E-03	3.8E+00	5.0E-03	3.8E+00		
AOI-11	Zone1	MW-4005	4005-052103-1245DL	5/21/2003	TOTAL	SVOC	Dibenz(a,h)anthracene	53-70-3	2.10E-03	2.0E-03	1.1E+00	2.0E-03	1.1E+00		
AOI-11	Zone1	MW-4005	4005-052103-1245DL	5/21/2003	TOTAL	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.00E-02	2.0E-03	5.0E+00	2.0E-03	5.0E+00		
AOI-11	Zone1	MW-4005	4005-093003-1110DL	9/30/2003	TOTAL	SVOC	Benzo(a)pyrene	50-32-8	1.90E-02	5.0E-03	3.8E+00	2.0E-03	9.5E+00		
AOI-11	Zone1	MW-4005	4005-093003-1110DL	9/30/2003	TOTAL	SVOC	Benzo(b)fluoranthene	205-99-2	3.00E-02	2.0E-03	1.5E+01	2.0E-03	1.5E+01		
AOI-11	Zone1	MW-4005	4005-093003-1110DL	9/30/2003	TOTAL	SVOC	Benzo(g,h,i)perylene	191-24-2	1.50E-02	5.0E-03	3.0E+00	5.0E-03	3.0E+00		
AOI-11	Zone1	MW-4005	4005-093003-1110DL	9/30/2003	TOTAL	SVOC	Benzo(k)fluoranthene	207-08-9	1.60E-02	5.0E-03	3.2E+00	5.0E-03	3.2E+00		
AOI-11	Zone1	MW-4005	4005-093003-1110DL	9/30/2003	TOTAL	SVOC	Chrysene	218-01-9	2.40E-02	5.0E-03	4.8E+00	5.0E-03	4.8E+00		
AOI-11	Zone1	MW-4005	4005-093003-1110DL	9/30/2003	TOTAL	SVOC	Dibenz(a,h)anthracene	53-70-3	4.10E-03	2.0E-03	2.1E+00	2.0E-03	2.1E+00		
AOI-11	Zone1	MW-4005	4005-093003-1110DL	9/30/2003	TOTAL	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.50E-02	2.0E-03	7.5E+00	2.0E-03	7.5E+00		
AOI-11	Zone1	MW-4008	4008-060503-1600DL	6/5/2003	TOTAL	VOC	Benzene	71-43-2	2.20E-01	5.0E-03	4.4E+01	1.1E+01	2.0E-02	4.3E+03	5.1E-05
AOI-11	Zone1	MW-4009	4009-060503-1735	6/5/2003	TOTAL	INORG	Lead	7439-92-1	5.50E-02	4.0E-03	1.4E+01				
AOI-11	Zone1	MW-4009	4009-060503-1735DL	6/5/2003	TOTAL	VOC	Benzene	71-43-2	1.30E-01	5.0E-03	2.6E+01	1.1E+01	1.2E-02	4.3E+03	3.0E-05
AOI-11	Zone1	MW-4009	4009-060503-1735DL	6/5/2003	TOTAL	VOC	Ethyl Benzene	100-41-4	1.40E+00	7.0E-01	2.0E+00	1.7E+02	8.2E-03	5.6E+05	2.5E-06
AOI-11	Zone1	MW-4009	4009-060503-1735DL	6/5/2003	TOTAL	VOC	Toluene	108-88-3	2.00E+00	1.0E+00	2.0E+00	5.3E+02	3.8E-03	4.9E+05	4.1E-06
AOI-11	Zone1	MW-4009	4009-060503-1735DL	6/5/2003	TOTAL	VOC	Xylenes (total)	1330-20-7	1.20E+01	1.0E+01	1.2E+00	1.9E+02	6.3E-02	5.7E+05	2.1E-05
AOI-13	Zone1	MW-4408	M08-051303-1200 (WATER ONLY)	5/13/2003	TOTAL	INORG	Iron	7439-89-6	1.54E+01	5.6E+00	2.8E+00	5.8E+04	2.7E-04		
AOI-13	Zone1	MW-4408	M08-051303-1200 (WATER ONLY)	5/13/2003	TOTAL	INORG	Lead	7439-92-1	7.20E-03	4.0E-03	1.8E+00				
AOI-13	Zone1	MW-4408	M08-051303-1200 (WATER ONLY)	5/13/2003	TOTAL	INORG	Thallium	7440-28-0	5.30E-03	2.0E-03	2.7E+00	1.3E+01	4.1E-04		
AOI-13	Zone1	MW-4408	M08-051303-1200 (WATER ONLY)DL	5/13/2003	TOTAL	INORG	Sodium	7440-23-5	1.29E+03	3.5E+02	3.7E+00	1.0E+06	1.3E-03		
AOI-13	Zone1	MW-4410	M10-051303-1215 (WATER LAYER ONLY)	5/13/2003	TOTAL	INORG	Arsenic	7440-38-2	7.60E-02	5.0E-02	1.5E+00	4.3E+00	1.8E-02		
AOI-13	Zone1	MW-4410	M10-051303-1215 (WATER LAYER ONLY)	5/13/2003	TOTAL	INORG	Iron	7439-89-6	2.36E+01	5.6E+00	4.2E+00	5.8E+04	4.1E-04		
AOI-13	Zone1	MW-4410	M10-051303-1215 (WATER LAYER ONLY)DL	5/13/2003	TOTAL	INORG	Sodium	7440-23-5	6.68E+02	3.5E+02	1.9E+00	1.0E+06	6.7E-04		
AOI-13	Zone1	MW-4417	4417-060503-1235DL	6/5/2003	TOTAL	VOC	1,1-Dichloroethene	75-35-4	2.30E-02	7.0E-03	3.3E+00	1.1E+01	2.1E-03	1.2E+04	1.9E-06
AOI-13	Zone1	MW-4417	4417-060503-1235DL	6/5/2003	TOTAL	VOC	cis-1,2-Dichloroethene	156-59-2	1.00E-01	7.0E-02	1.4E+00	2.0E+02	5.0E-04	1.3E+06	7.8E-08
AOI-13	Zone1	MW-4417	4417-060503-1235DL	6/5/2003	TOTAL	VOC	Trichloroethene	79-01-6	4.50E-01	5.0E-03	9.0E+01	2.2E+01	2.0E-02	2.8E+05	1.6E-06
AOI-13	Zone1	MW-4417	4417-060503-1235DL	6/5/2003	TOTAL	VOC	Vinyl Chloride	75-01-4	1.40E-01	2.0E-03	7.0E+01	1.0E+00	1.4E-01	1.3E+03	1.1E-04
AOI-13	Zone1	MW-4417	4417-060503-1235DL	6/5/2003	TOTAL	INORG	Sodium	7440-23-5	8.32E+02	3.5E+02	2.4E+00	1.0E+06	8.3E-04		
AOI-13	Zone1	MW-4417	4417-060503-1235R3	6/5/2003	TOTAL	SVOC	Pentachlorophenol	87-86-5	4.10E-03	1.0E-03	4.1E+00	2.0E-01	2.1E-02	6.1E+07	6.7E-11
AOI-13	Zone1	MW-4418	418-060603-0948	6/6/2003	TOTAL	VOC	Vinyl Chloride	75-01-4	1.00E-02	2.0E-03	5.0E+00	1.0E+00	1.0E-02	1.3E+03	7.6E-06
AOI-13	Zone1	MW-4418	418-06												

**Table 2-3c: Groundwater Samples Exceeding Screening Criteria for On-Site Monitoring Wells**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

AOI	Well Zone	Location	Sample ID	Sample Date	Meas Basis	Chem Group	Chemical	CASRN	Conc (mg/L)	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detect to Industrial Drinking Water Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Site Specific Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detect to Site Specific Industrial Groundwater Volatilization to Indoor Air Criteria
AOI-26	Zone1	MW-4106	4106-121702-1300	12/17/2002	TOTAL	INORG	Iron	7439-89-6	9.40E+00	5.6E+00	1.7E+00	5.8E+04	1.6E-04		
AOI-26	Zone1	MW-4106	4106-121702-1300DL	12/17/2002	TOTAL	VOC	1,1-Dichloroethene	75-35-4	2.30E-02	7.0E-03	3.3E+00	1.1E+01	2.1E-03	1.2E+04	1.9E-06
AOI-26	Zone1	MW-4106	4106-121702-1300DL	12/17/2002	TOTAL	VOC	cis-1,2-Dichloroethene	156-59-2	1.80E-01	7.0E-02	2.6E+00	2.0E+02	9.0E-04	1.3E+06	1.4E-07
AOI-26	Zone1	MW-4106	4106-121702-1300DL	12/17/2002	TOTAL	VOC	1,1,1-Trichloroethane	71-55-6	2.70E-01	2.0E-01	1.4E+00	1.3E+03	2.1E-04	1.6E+06	1.7E-07
AOI-26	Zone1	MW-4106	4106-121702-1300DL	12/17/2002	TOTAL	VOC	Trichloroethene	79-01-6	2.00E-01	5.0E-03	4.0E+01	2.2E+01	9.1E-03	2.8E+05	7.2E-07
AOI-26	Zone1	MW-4106	4106-121702-1300DL	12/17/2002	TOTAL	VOC	Vinyl Chloride	75-01-4	6.40E-02	2.0E-03	3.2E+01	1.0E+00	6.4E-02	1.3E+03	4.9E-05
AOI-26	Zone1	MW-4106	W06-051503-1800DL	5/15/2003	TOTAL	VOC	1,1-Dichloroethene	75-35-4	1.40E-02	7.0E-03	2.0E+00	1.1E+01	1.3E-03	1.2E+04	1.2E-06
AOI-26	Zone1	MW-4106	W06-051503-1800DL	5/15/2003	TOTAL	VOC	cis-1,2-Dichloroethene	156-59-2	2.80E-01	7.0E-02	4.0E+00	2.0E+02	1.4E-03	1.3E+06	2.2E-07
AOI-26	Zone1	MW-4106	W06-051503-1800DL	5/15/2003	TOTAL	VOC	1,1,1-Trichloroethane	71-55-6	2.90E-01	2.0E-01	1.5E+00	1.3E+03	2.2E-04	1.6E+06	1.9E-07
AOI-26	Zone1	MW-4106	W06-051503-1800DL	5/15/2003	TOTAL	VOC	Trichloroethene	79-01-6	3.00E-01	5.0E-03	6.0E+01	2.2E+01	1.4E-02	2.8E+05	1.1E-06
AOI-26	Zone1	MW-4106	W06-051503-1800DL	5/15/2003	TOTAL	VOC	Vinyl Chloride	75-01-4	1.50E-01	2.0E-03	7.5E+01	1.0E+00	1.5E-01	1.3E+03	1.1E-04
AOI-26	Zone1	MW-4108	OW-8 03/26/1991	3/26/1991	TOTAL	VOC	1,2-Dichloroethane	107-06-2	1.01E-02	5.0E-03	2.0E+00	1.9E+01	5.3E-04	1.8E+04	5.5E-07
AOI-26	Zone1	MW-4108	OW-8 03/26/1991	3/26/1991	TOTAL	VOC	cis-1,2-Dichloroethene	156-59-2	8.45E-02	7.0E-02	1.2E+00	2.0E+02	4.2E-04	1.3E+06	6.6E-08
AOI-26	Zone1	MW-4108	OW-8 10/04/1990	10/4/1990	TOTAL	VOC	1,2-Dichloroethane	107-06-2	1.70E-02	5.0E-03	3.4E+00	1.9E+01	8.9E-04	1.8E+04	9.2E-07
AOI-26	Zone1	MW-4109	OW-9 03/26/1991	3/26/1991	TOTAL	VOC	Trichloroethene	79-01-6	1.10E-02	5.0E-03	2.2E+00	2.2E+01	5.0E-04	2.8E+05	4.0E-08
AOI-26	Zone2	MW-4113	0713-062602-1130	6/26/2002	TOTAL	INORG	Iron	7439-89-6	1.02E+01	5.6E+00	1.8E+00	5.8E+04	1.8E-04		
AOI-26	Zone2	MW-4113	0713-062602-1130	6/26/2002	TOTAL	INORG	Lead	7439-92-1	1.90E-02	4.0E-03	4.8E+00				
AOI-26	Zone1	MW-4115	W15-051603-1340DL	5/16/2003	TOTAL	VOC	Trichloroethene	79-01-6	3.70E-02	5.0E-03	7.4E+00	2.2E+01	1.7E-03	2.8E+05	1.3E-07
AOI-26	Zone1	MW-4118	4118-052903-1900DL	5/29/2003	TOTAL	VOC	Trichloroethene	79-01-6	3.70E-02	5.0E-03	7.4E+00	2.2E+01	1.7E-03	2.8E+05	1.3E-07
AOI-26	Zone1	MW-4119	4119-121602-1420	12/16/2002	TOTAL	INORG	Iron	7439-89-6	1.29E+01	5.6E+00	2.3E+00	5.8E+04	2.2E-04		
AOI-26	Zone1	MW-4120	4120-121802-1520DL	12/18/2002	TOTAL	VOC	Vinyl Chloride	75-01-4	3.80E-02	2.0E-03	1.9E+01	1.0E+00	3.8E-02	1.3E+03	2.9E-05
AOI-26	Zone1	MW-4120	W20-051603-0925	5/16/2003	TOTAL	VOC	Vinyl Chloride	75-01-4	2.90E-03	2.0E-03	1.5E+00	1.0E+00	2.9E-03	1.3E+03	2.2E-06
AOI-26	Zone1	MW-4121	4121-121902-1450DL	12/19/2002	TOTAL	VOC	1,1-Dichloroethene	75-35-4	3.00E-02	7.0E-03	4.3E+00	1.1E+01	2.7E-03	1.2E+04	2.5E-06
AOI-26	Zone1	MW-4121	W21-051603-1655DL	5/16/2003	TOTAL	VOC	1,1-Dichloroethene	75-35-4	2.10E-02	7.0E-03	3.0E+00	1.1E+01	1.9E-03	1.2E+04	1.8E-06
AOI-37	Zone1	MW-4502	MW-4502 03/17/2000	3/17/2000	TOTAL	VOC	1,1-Dichloroethene	75-35-4	2.90E-01	7.0E-03	4.1E+01	1.1E+01	2.6E-02	1.2E+04	2.4E-05
AOI-37	Zone1	MW-4502	MW-4502 03/17/2000	3/17/2000	TOTAL	VOC	1,1,1-Trichloroethane	71-55-6	3.10E+00	2.0E-01	1.6E+01	1.3E+03	2.4E-03	1.6E+06	2.0E-06
AOI-48	Zone2	MW-4606D	606D-060603-1700	6/6/2003	TOTAL	INORG	Thallium	7440-28-0	5.40E-03	2.0E-03	2.7E+00	1.3E+01	4.2E-04		
AOI-48	Zone2	MW-4608D	608D-060603-1700	6/6/2003	TOTAL	INORG	Thallium	7440-28-0	7.50E-03	2.0E-03	3.8E+00	1.3E+01	5.8E-04		
AOI-48	Zone1	MW-4609	0713-062102-1225	6/21/2002	TOTAL	INORG	Manganese	7439-96-5	5.70E+00	2.5E+00	2.3E+00	9.1E+03	6.3E-04		
AOI-48	Zone2	MW-4610	0713-070202-1650	7/2/2002	TOTAL	INORG	Aluminum	7429-90-5	2.52E+01	4.1E+00	6.1E+00	6.4E+04	3.9E-04		
AOI-48	Zone2	MW-4610	0713-070202-1650	7/2/2002	TOTAL	INORG	Iron	7439-89-6	4.47E+01	5.6E+00	8.0E+00	5.8E+04	7.7E-04		
AOI-48	Zone2	MW-4610	0713-070202-1650	7/2/2002	TOTAL	INORG	Lead	7439-92-1	2.00E-02	4.0E-03	5.0E+00				
AOI-48	Zone2	MW-4610	0713-070202-1650DL	7/2/2002	TOTAL	VOC	Vinyl Chloride	75-01-4	4.90E-02	2.0E-03	2.5E+01	1.0E+00	4.9E-02	1.3E+03	3.7E-05
AOI-48	Zone2	MW-4610	4610-052903-1655DL	5/29/2003	TOTAL	VOC	Vinyl Chloride	75-01-4	1.40E-01	2.0E-03	7.0E+01	1.0E+00	1.4E-01	1.3E+03	1.1E-04
AOI-48	Zone2	MW-4610D	0713-062702-1210DL	6/27/2002	TOTAL	VOC	Vinyl Chloride	75-01-4	9.30E-03	2.0E-03	4.7E+00	1.0E+00	9.3E-03	1.3E+03	7.1E-06
AOI-48	Zone2	MW-4610D	610D-052903-1520DL	5/29/2003	TOTAL	VOC	cis-1,2-Dichloroethene	156-59-2	9.10E-02	7.0E-02	1.3E+00	2.0E+02	4.6E-04	1.3E+06	7.1E-08
AOI-48	Zone2	MW-4610D	610D-052903-1520DL	5/29/2003	TOTAL	VOC	Vinyl Chloride	75-01-4	2.30E-02	2.0E-0					

**Table 2-3c: Groundwater Samples Exceeding Screening Criteria for On-Site Monitoring Wells**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

AOI	Well Zone	Location	Sample ID	Sample Date	Meas Basis	Chem Group	Chemical	CASRN	Conc (mg/L)	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detect to Industrial Drinking Water Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Site Specific Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detect to Site Specific Industrial Groundwater Volatilization to Indoor Air Criteria
AOI-48 (NW)	Zone2	MW-4605D	0713-062502-1210	6/25/2002	TOTAL	INORG	Lead	7439-92-1	4.70E-03	4.0E-03	1.2E+00				
AOI-48 (NW)	Zone2	MW-4620D	0713-070102-1100	7/1/2002	TOTAL	INORG	Aluminum	7429-90-5	6.00E+00	4.1E+00	1.5E+00	6.4E+04	9.4E-05		
AOI-48 (NW)	Zone2	MW-4620D	0713-070102-1100	7/1/2002	TOTAL	INORG	Iron	7439-89-6	1.39E+01	5.6E+00	2.5E+00	5.8E+04	2.4E-04		
AOI-48 (NW)	Zone2	MW-4620D	0713-070102-1100	7/1/2002	TOTAL	INORG	Lead	7439-92-1	1.00E-02	4.0E-03	2.5E+00				
AOI-48 (NW)	Zone2	MW-4620D	0713-070102-1100DL	7/1/2002	TOTAL	VOC	Trichloroethene	79-01-6	3.80E-02	5.0E-03	7.6E+00	2.2E+01	1.7E-03	2.8E+05	1.4E-07
AOI-48 (NW)	Zone2	MW-4620D	620D-053003-0945DL	5/30/2003	TOTAL	VOC	Trichloroethene	79-01-6	3.80E-02	5.0E-03	7.6E+00	2.2E+01	1.7E-03	2.8E+05	1.4E-07
AOI-48 (NW)	Zone1/Zone2	MW-4620S	0713-070102-1335	7/1/2002	TOTAL	VOC	Trichloroethene	79-01-6	8.20E-03	5.0E-03	1.6E+00	2.2E+01	3.7E-04	2.8E+05	3.0E-08
AOI-48 (NW)	Zone1/Zone2	MW-4620S	0713-070102-1335	7/1/2002	TOTAL	INORG	Aluminum	7429-90-5	4.90E+00	4.1E+00	1.2E+00	6.4E+04	7.7E-05		
AOI-48 (NW)	Zone1/Zone2	MW-4620S	0713-070102-1335	7/1/2002	TOTAL	INORG	Iron	7439-89-6	1.00E+01	5.6E+00	1.8E+00	5.8E+04	1.7E-04		
AOI-48 (NW)	Zone1/Zone2	MW-4620S	0713-070102-1335	7/1/2002	TOTAL	INORG	Lead	7439-92-1	6.50E-03	4.0E-03	1.6E+00				
AOI-48 (NW)	Zone1/Zone2	MW-4620S	620S-053003-1150	5/30/2003	TOTAL	VOC	Trichloroethene	79-01-6	6.90E-03	5.0E-03	1.4E+00	2.2E+01	3.1E-04	2.8E+05	2.5E-08
AOI-48 (NW)	Zone2	MW-4623D	0713-062602-1530	6/26/2002	TOTAL	INORG	Aluminum	7429-90-5	4.35E+00	4.1E+00	1.1E+00	6.4E+04	6.8E-05		
AOI-48 (NW)	Zone2	MW-4623D	0713-062602-1530	6/26/2002	TOTAL	INORG	Iron	7439-89-6	8.40E+00	5.6E+00	1.5E+00	5.8E+04	1.4E-04		
AOI-48 (NW)	Zone2	MW-4623D	0713-062602-1530	6/26/2002	TOTAL	INORG	Sodium	7440-23-5	5.73E+02	3.5E+02	1.6E+00	1.0E+06	5.7E-04		
AOI-48 (NW)	Zone2	MW-4623D	623D-052203-1330DL	5/22/2003	TOTAL	VOC	Benzene	71-43-2	8.30E-03	5.0E-03	1.7E+00	1.1E+01	7.5E-04	4.3E+03	1.9E-06
AOI-48 (NW)	Zone1/Zone2	MW-4623S	0713-062702-0945DL	6/27/2002	TOTAL	INORG	Sodium	7440-23-5	8.00E+02	3.5E+02	2.3E+00	1.0E+06	8.0E-04		
AOI-48 (NW)	Zone2	MW-4626D	626D-060603-1210	6/6/2003	TOTAL	VOC	Trichloroethene	79-01-6	9.00E-03	5.0E-03	1.8E+00	2.2E+01	4.1E-04	2.8E+05	3.3E-08
AOI-48 (NW)	Zone2	MW-4626M	4626M-093003-1245DL	9/30/2003	TOTAL	VOC	Trichloroethene	79-01-6	8.50E+02	5.0E-03	1.7E+05	2.2E+01	3.9E+01	2.8E+05	3.1E-03
AOI-48 (NW)	Zone2	MW-4626M	626M-060603-0955DL	6/6/2003	TOTAL	VOC	Trichloroethene	79-01-6	6.30E+02	5.0E-03	1.3E+05	2.2E+01	2.9E+01	2.8E+05	2.3E-03
AOI-48 (NW)	Zone1	MW-4626S	626S-060603-1430DL	6/6/2003	TOTAL	VOC	cis-1,2-Dichloroethene	156-59-2	2.90E-01	7.0E-02	4.1E+00	2.0E+02	1.5E-03	1.3E+06	2.3E-07
AOI-48 (NW)	Zone1	MW-4626S	626S-060603-1430DL	6/6/2003	TOTAL	VOC	Trichloroethene	79-01-6	7.90E+00	5.0E-03	1.6E+03	2.2E+01	3.6E-01	2.8E+05	2.9E-05
AOI-48 (NW)	Zone2	MW-4627D	627D-060303-1835DL	6/3/2003	TOTAL	VOC	Trichloroethene	79-01-6	6.40E-02	5.0E-03	1.3E+01	2.2E+01	2.9E-03	2.8E+05	2.3E-07
AOI-48 (NW)	Zone2	MW-4627D	627D-060303-1835DL	6/3/2003	TOTAL	VOC	Vinyl Chloride	75-01-4	2.80E-03	2.0E-03	1.4E+00	1.0E+00	2.8E-03	1.3E+03	2.1E-06
AOI-48 (NW)	Zone1/Zone2	MW-4627S	627S-060303-1850DL	6/3/2003	TOTAL	VOC	Trichloroethene	79-01-6	4.70E+00	5.0E-03	9.4E+02	2.2E+01	2.1E-01	2.8E+05	1.7E-05
AOI-48(SE)/Blg 4111	Zone1	MW-4642S	642S-060503-1550DL	6/5/2003	TOTAL	VOC	Carbon Tetrachloride	56-23-5	2.65E+01	5.0E-03	5.3E+03	4.6E+00	5.8E+00	8.2E+03	3.2E-03
AOI-48(SE)/Blg 4111	Zone1	MW-4642S	642S-060503-1550DL	6/5/2003	TOTAL	VOC	Chloroform	67-66-3	8.55E-01	1.0E-01	8.6E+00	1.5E+02	5.7E-03	1.7E+04	5.1E-05
AOI-48(SE)/Blg 4111	Zone1	MW-4642S	642S-060503-1550DL	6/5/2003	TOTAL	VOC	Trichloroethene	79-01-6	1.95E+01	5.0E-03	3.9E+03	2.2E+01	8.9E-01	2.8E+05	7.1E-05
AOI-48(SE)/Blg 4111	Zone1	MW-4643S	643S-060503-1815DL	6/5/2003	TOTAL	VOC	Carbon Tetrachloride	56-23-5	6.10E+00	5.0E-03	1.2E+03	4.6E+00	1.3E+00	8.2E+03	7.4E-04
AOI-48(SE)/Blg 4111	Zone1	MW-4643S	643S-060503-1815DL	6/5/2003	TOTAL	VOC	Chloroform	67-66-3	4.70E-01	1.0E-01	4.7E+00	1.5E+02	3.1E-03	1.7E+04	2.8E-05
AOI-48(SE)/Blg 4111	Zone1	MW-4643S	643S-060503-1815DL	6/5/2003	TOTAL	VOC	cis-1,2-Dichloroethene	156-59-2	4.30E+00	7.0E-02	6.1E+01	2.0E+02	2.2E-02	1.3E+06	3.4E-06
AOI-48(SE)/Blg 4111	Zone1	MW-4643S	643S-060503-1815DL	6/5/2003	TOTAL	VOC	trans-1,2-Dichloroethene	156-60-5	2.40E-01	1.0E-01	2.4E+00	2.2E+02	1.1E-03	7.7E+05	3.1E-07
AOI-48(SE)/Blg 4111	Zone1	MW-4643S	643S-060503-1815DL	6/5/2003	TOTAL	VOC	Trichloroethene	79-01-6	2.20E+01	5.0E-03	4.4E+03	2.2E+01	1.0E+00	2.8E+05	8.0E-05
AOI-49	Zone2	MW-4622D	0713-070102-1625	7/1/2002	TOTAL	VOC	Vinyl Chloride	75-01-4	5.30E-03	2.0E-03	2.7E+00	1.0E+00	5.3E-03	1.3E+03	4.0E-06
AOI-49	Zone2	MW-4622D	622D-053003-1525	5/30/2003	TOTAL	VOC	Vinyl Chloride	75-01-4	2.20E-03	2.0E-03	1.1E+00	1.0E+00	2.2E-03	1.3E+03	1.7E-06
AOI-49	Zone1	MW-4622S	0713-070202-1010DL	7/2/2002	TOTAL	VOC	1,1-Dichloroethane	75-34-3	3.05E+00	2.5E+00	1.2E+00	2.4E+03	1.3E-03	5.4E+05	5.6E-06
AOI-49	Zone1	MW-4622S	0713-070202-1010DL	7/2/2002	TOTAL	VOC	1,2-Dichloroethane	107-06-2	3.20E-02	5.0E-03	6.4E+00	1.9E+01	1.7E-03	1.8E+04	1.7E-06
AOI-49	Zone1	MW-4622S	0713-070202-1010DL	7/2/2002											

**Table 2-3c: Groundwater Samples Exceeding Screening Criteria for On-Site Monitoring Wells**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

AOI	Well Zone	Location	Sample ID	Sample Date	Meas Basis	Chem Group	Chemical	CASRN	Conc (mg/L)	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detect to Industrial Drinking Water Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Site Specific Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detect to Site Specific Industrial Groundwater Volatilization to Indoor Air Criteria
AOI-49	Zone1	MW-4639S	639S-060403-0900DL	6/4/2003	TOTAL	VOC	cis-1,2-Dichloroethene	156-59-2	1.90E-01	7.0E-02	<b>2.7E+00</b>	2.0E+02	9.5E-04	1.3E+06	1.5E-07
AOI-49	Zone1	MW-4639S	639S-060403-0900DL	6/4/2003	TOTAL	VOC	Trichloroethene	79-01-6	3.40E-02	5.0E-03	<b>6.8E+00</b>	2.2E+01	1.5E-03	2.8E+05	1.2E-07
AOI-50	Zone1	MW-4632S	632S-060403-1605DL	6/4/2003	TOTAL	VOC	1,1-Dichloroethene	75-35-4	2.00E-01	7.0E-03	<b>2.9E+01</b>	1.1E+01	1.8E-02	1.2E+04	1.7E-05
AOI-50	Zone1	MW-4632S	632S-060403-1605DL	6/4/2003	TOTAL	VOC	cis-1,2-Dichloroethene	156-59-2	5.00E-01	7.0E-02	<b>7.1E+00</b>	2.0E+02	2.5E-03	1.3E+06	3.9E-07
AOI-50	Zone1	MW-4632S	632S-060403-1605DL	6/4/2003	TOTAL	VOC	Trichloroethene	79-01-6	2.00E-01	5.0E-03	<b>4.0E+01</b>	2.2E+01	9.1E-03	2.8E+05	7.2E-07
AOI-50	Zone1	MW-4632S	632S-060403-1605DL	6/4/2003	TOTAL	VOC	Vinyl Chloride	75-01-4	8.40E-02	2.0E-03	<b>4.2E+01</b>	1.0E+00	8.4E-02	1.3E+03	6.4E-05
AOI-50	Zone1	MW-4633S	633S-060503-1200DL	6/5/2003	TOTAL	VOC	1,1-Dichloroethene	75-35-4	9.60E-02	7.0E-03	<b>1.4E+01</b>	1.1E+01	8.7E-03	1.2E+04	8.0E-06
AOI-50	Zone1	MW-4633S	633S-060503-1200DL	6/5/2003	TOTAL	VOC	Trichloroethene	79-01-6	3.70E-02	5.0E-03	<b>7.4E+00</b>	2.2E+01	1.7E-03	2.8E+05	1.3E-07
AOI-50	Zone1	MW-4633S	633S-060503-1200DL	6/5/2003	TOTAL	VOC	Vinyl Chloride	75-01-4	6.40E-03	2.0E-03	<b>3.2E+00</b>	1.0E+00	6.4E-03	1.3E+03	4.9E-06
AOI-50	Zone1	MW-4634S	634S-060503-1025DL	6/5/2003	TOTAL	VOC	Benzene	71-43-2	2.00E-01	5.0E-03	<b>4.0E+01</b>	1.1E+01	1.8E-02	4.3E+03	4.6E-05
AOI-50	Zone1	MW-4634S	634S-060503-1025DL	6/5/2003	TOTAL	VOC	1,1-Dichloroethane	75-34-3	6.10E+00	2.5E+00	<b>2.4E+00</b>	2.4E+03	2.5E-03	5.4E+05	1.1E-05
AOI-50	Zone1	MW-4634S	634S-060503-1025DL	6/5/2003	TOTAL	VOC	1,1-Dichloroethene	75-35-4	6.30E+00	7.0E-03	<b>9.0E+02</b>	1.1E+01	5.7E-01	1.2E+04	5.3E-04
AOI-50	Zone1	MW-4634S	634S-060503-1025DL	6/5/2003	TOTAL	VOC	cis-1,2-Dichloroethene	156-59-2	8.00E+00	7.0E-02	<b>1.1E+02</b>	2.0E+02	4.0E-02	1.3E+06	6.3E-06
AOI-50	Zone1	MW-4634S	634S-060503-1025DL	6/5/2003	TOTAL	VOC	1,1,1-Trichloroethane	71-55-6	2.60E-01	2.0E-01	<b>1.3E+00</b>	1.3E+03	2.0E-04	1.6E+06	1.7E-07
AOI-50	Zone1	MW-4634S	634S-060503-1025DL	6/5/2003	TOTAL	VOC	Trichloroethene	79-01-6	2.20E-01	5.0E-03	<b>4.4E+01</b>	2.2E+01	1.0E-02	2.8E+05	8.0E-07
AOI-50	Zone1	MW-4634S	634S-060503-1025DL	6/5/2003	TOTAL	VOC	Vinyl Chloride	75-01-4	1.50E+00	2.0E-03	<b>7.5E+02</b>	1.0E+00	<b>1.5E+00</b>	1.3E+03	1.1E-03
AOI-50	Zone1	MW-4635S	635S-060403-1330DL	6/4/2003	TOTAL	VOC	1,1-Dichloroethene	75-35-4	2.90E-02	7.0E-03	<b>4.1E+00</b>	1.1E+01	2.6E-03	1.2E+04	2.4E-06
AOI-50	Zone1	MW-4635S	635S-060403-1330DL	6/4/2003	TOTAL	VOC	Vinyl Chloride	75-01-4	3.20E-03	2.0E-03	<b>1.6E+00</b>	1.0E+00	3.2E-03	1.3E+03	2.4E-06
AOI-50	Zone1	MW-4636S	636S-060403-1045DL	6/4/2003	TOTAL	VOC	1,1-Dichloroethene	75-35-4	4.80E-02	7.0E-03	<b>6.9E+00</b>	1.1E+01	4.4E-03	1.2E+04	4.0E-06
AOI-50	Zone1	MW-4636S	636S-060403-1045DL	6/4/2003	TOTAL	VOC	Vinyl Chloride	75-01-4	5.40E-03	2.0E-03	<b>2.7E+00</b>	1.0E+00	5.4E-03	1.3E+03	4.1E-06

**Table 2-3d: Groundwater Samples Exceeding Screening Criteria for Off-Site Monitoring Wells**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

AOI	Well Zone	Location	Sample ID	Sample Date	Meas Basis	Chem Group	Chemical	CASRN	Conc (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detect to Residential Drinking Water Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Site Specific Residential Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detect to Site Specific Residential Groundwater Volatilization to Indoor Air Criteria
AOI-48	Zone2	MW-4615	0713-062002-1200	6/20/2002	TOTAL	INORG	Sodium	7440-23-5	1.61E+02	1.2E+02	<b>1.3E+00</b>	1.0E+06	1.6E-04		
AOI-48	Zone1	MW-4615S	0713-062002-1425	6/20/2002	TOTAL	INORG	Aluminum	7429-90-5	5.10E+00	3.0E-01	<b>1.7E+01</b>	6.4E+04	8.0E-05		
AOI-48	Zone1	MW-4615S	0713-062002-1425	6/20/2002	TOTAL	INORG	Iron	7439-89-6	6.60E+00	2.0E+00	<b>3.3E+00</b>	5.8E+04	1.1E-04		
AOI-48	Zone1	MW-4615S	0713-062002-1425	6/20/2002	TOTAL	INORG	Lead	7439-92-1	6.50E-03	4.0E-03	<b>1.6E+00</b>				
AOI-48	Zone1	MW-4615S	0713-062002-1425	6/20/2002	TOTAL	INORG	Sodium	7440-23-5	2.18E+02	1.2E+02	<b>1.8E+00</b>	1.0E+06	2.2E-04		
AOI-48	Zone1	MW-4615S	0713-062002-1425	6/20/2002	TOTAL	INORG	Vanadium	7440-62-2	9.70E-03	4.5E-03	<b>2.2E+00</b>	9.7E+02	1.0E-05		
AOI-48 (NW)	Zone2	MW-4624D	624D-060203-1250	6/2/2003	TOTAL	INORG	Aluminum	7429-90-5	6.70E+00	3.0E-01	<b>2.2E+01</b>	6.4E+04	1.0E-04		
AOI-48 (NW)	Zone2	MW-4624D	624D-060203-1250	6/2/2003	TOTAL	INORG	Iron	7439-89-6	9.10E+00	2.0E+00	<b>4.6E+00</b>	5.8E+04	1.6E-04		
AOI-48 (NW)	Zone2	MW-4624D	624D-060203-1250	6/2/2003	TOTAL	INORG	Vanadium	7440-62-2	1.50E-02	4.5E-03	<b>3.3E+00</b>	9.7E+02	1.5E-05		
AOI-48 (NW)	Zone1	MW-4625S	625S-060203-1745DL	6/2/2003	TOTAL	VOC	cis-1,2-Dichloroethene	156-59-2	8.30E-02	7.0E-02	<b>1.2E+00</b>	2.0E+02	4.2E-04	4.9E+01	1.7E-03
AOI-48 (NW)	Zone1	MW-4625S	625S-060203-1745DL	6/2/2003	TOTAL	VOC	Trichloroethene	79-01-6	4.20E-02	5.0E-03	<b>8.4E+00</b>	2.2E+01	1.9E-03	1.1E+01	3.9E-03
AOI-48 (NW)	Zone2	MW-4629D	629D-060603-1810DL	6/6/2003	TOTAL	VOC	Trichloroethene	79-01-6	5.10E-01	5.0E-03	<b>1.0E+02</b>	2.2E+01	2.3E-02	1.1E+01	4.7E-02
AOI-48 (NW)	Zone2	MW-4631D	631D-060603-1455	6/6/2003	TOTAL	INORG	Aluminum	7429-90-5	1.60E+00	3.0E-01	<b>5.3E+00</b>	6.4E+04	2.5E-05		
AOI-48 (NW)	Zone2	MW-4631D	631D-060603-1455	6/6/2003	TOTAL	INORG	Iron	7439-89-6	2.70E+00	2.0E+00	<b>1.4E+00</b>	5.8E+04	4.7E-05		

**Table 2-4: Estimates of High-End Cumulative Cancer Risk and Hazard Index by AOI for Soil (Using Maximum Detected Concentrations)**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

On-Site /Off-Site	AOI	Area Description	Matrix	Industrial Cumulative Risk	Industrial HI
On-Site	AOI-03	Former Plating Operations (4099)	soil	3E-07	6E-03
On-Site	AOI-04	Former Plating Operations (4101)	soil	2E-06	6E-02
On-Site	AOI-08	Former Hard Chrome Plating Line (4082)	soil	2E-08	4E-03
On-Site	AOI-09	Barrel, Rack, and U1 Plating Line (4051/4050)	soil	4E-06	2E-01
On-Site	AOI-11	Executive Garage (4070)	soil	6E-06	8E-01
On-Site	AOI-13	Gridley Area (Interim Measures Work Plan) (4041)	soil	8E-06	2E-01
On-Site	AOI-14	Phosphater (4081)	soil	2E-06	6E-02
On-Site	AOI-16	Udylite Plating (4081)	soil	9E-07	6E-02
On-Site	AOI-17	Nickel Plating Line (4094)	soil	1E-06	5E-02
On-Site	AOI-18	Former Zinc Dichromate Plating Lines (West Plating Lines) (4100)	soil	2E-06	1E-01
On-Site	AOI-21	Waste Oil UST Tanks #4032 and #4033 (4091)	soil	1E-07	3E-01
On-Site	AOI-22	Chip Collection Area (4141)	soil	4E-07	3E-02
On-Site	AOI-23	Automatic Screw Machine Basement (4133)	soil	2E-06	2E-02
On-Site	AOI-25	Former Fire Training Area (4175)	soil	4E-06	1E-01
On-Site	AOI-26	Container Storage Area (Separate closure) (east of 4046X)	soil	4E-05	7E-01
On-Site	AOI-27	Pump House/Lift Station and Eastern Process Sewer (east property)	soil	2E-06	1E-01
On-Site	AOI-31	Former Diesel UST (Tank #4052) (between 4131 & 4095)	soil	2E-06	4E-04
On-Site	AOI-35	Former Glass Frit (4128)	soil	3E-06	1E-01
On-Site	AOI-37	Former Waste Viscor UST & Sump Collection System (east of 4100)	soil		2E-03
On-Site	AOI-45	Compactor (4085)	soil	6E-05	4E-02
On-Site	AOI-48	Groundwater	soil	6E-06	2E-01
On-Site	AOI-48 (NW)	Groundwater Northwest Corner	soil	4E-06	1E-01
On-Site	AOI-48 (SE)	Groundwater Southeast	soil	1E-07	7E-03
On-Site	AOI-49	Building 4082	soil	3E-06	2E-01
On-Site	AOI-50	Crane Bay	soil	9E-05	3E-02
Off-Site	AOI-48	Groundwater	soil	3E-06	7E-02
Off-Site	AOI-48 (NW)	Groundwater Northwest Corner	soil	2E-06	6E-02
	<b>Notes:</b>				
	1	Cancer Risk and Hazard Index are presented for all AOIs investigated during the RFI.			

**Table 2-5: Estimates of High-End Cumulative Cancer Risk and Hazard Index by AOI for LNAPLs**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Area	Smear Zone Soil				LNAPL			Combined	Smear Zone Soil				LNAPL			Combined	
	Ingestion	Dermal Contact	Vapor Inhalation	Total	Dermal Contact	Vapor Inhalation	Total		Ingestion	Dermal Contact	Vapor Inhalation	Total	Dermal Contact	Vapor Inhalation	Total		
	Cumulative Cancer Risk								Hazard Index (HI)								
AOI 13	NA	NA	NA	NA	NA	NA	NA	NA	1E-05	6E-06	1E-04	1E-04	2E-05	7E-03	7E-03	7E-03	
AOI 22	3E-09	9E-10	2E-10	4E-09	1E-10	5E-08	5E-08	5E-08	7E-05	2E-05	4E-05	1E-04	9E-05	4E-02	4E-02	4E-02	
AOI 50	4E-10	1E-10	3E-09	3E-09	6E-09	6E-06	6E-06	6E-06	2E-05	4E-06	3E-04	3E-04	3E-04	4E-01	4E-01	4E-01	
<b>Notes:</b>	NA = Risks were not calculated due to a lack of toxicity information for detected chemicals in the AOI.																
Estimated upper bound cumulative cancer risks and HIs are based on the maximum detected concentrations at each AOI.																	

## **A P P E N D I C E S**

**Appendix A: CA725 Form**

**DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION**  
Interim Final 2/5/99  
**RCRA Corrective Action**  
**Environmental Indicator (EI) RCRIS code (CA725)**

**Current Human Exposures Under Control**

**Facility Name:** Delphi Energy & Chassis Systems, Dort Highway Facility  
**Facility Address:** 1300 North Dort Highway, Flint, Michigan  
**Facility EPA ID #:** MID 005 356 647

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

- If yes - check here and continue with #2 below.  
 If no - re-evaluate existing data, or  
 If data are not available skip to #6 and enter "IN" (more information needed) status code.

**BACKGROUND**

**Definition of Environmental Indicators (for the RCRA Corrective Action)**

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

**Definition of "Current Human Exposures Under Control" EI**

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

**Relationship of EI to Final Remedies**

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

**Duration / Applicability of EI Determinations**

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

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2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be “**contaminated**”<sup>1</sup> above appropriately protective risk-based “levels” (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale / Key Contaminants</u>
Groundwater	X			<i>See Tables 2-3a through 2-3d of EI Report</i>
Air (indoors) <sup>2</sup>		X		
Surface Soil (e.g., <2 ft)	X			<i>See Tables 2-1a through 2-1c of EI Report</i>
Surface Water		X		
Sediment		X		
Subsurf. Soil (e.g., >2 ft)	X			<i>See Tables 2-1a through 2-1c of EI Report</i>
Air (outdoors)		X		

- \_\_\_\_\_ If no (for all media) - skip to #6, and enter “YE,” status code after providing or citing appropriate “levels,” and referencing sufficient supporting documentation demonstrating that these “levels” are not exceeded
- X** \_\_\_\_\_ If yes (for any media) - continue after identifying key contaminants in each “contaminated” medium, citing appropriate “levels” (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.
- \_\_\_\_\_ If unknown (for any media) - skip to #6 and enter “IN” status code.

Rationale and Reference(s):

Footnotes:

<sup>1</sup> “Contamination” and “contaminated” describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based “levels” (for the media, that identify risks within the acceptable risk range).

<sup>2</sup> Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

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*The risk-based screening criteria used to identify “contamination” and the results of the comparison of site characterization data with these criteria are discussed in Section 2.2 of the RCRA Environmental Indicators (EI) CA725 Report (ENVIRON 2003). The screening criteria for on-site soil are the Michigan Part 201 generic industrial direct contact criteria, industrial soil volatilization to ambient air criteria, and industrial particulate inhalation criteria (MDEQ 2002). Industrial soil vapor intrusion criteria are based on site-specific information. The screening criteria for off-site soil are the Michigan Part 201 generic residential direct contact criteria, residential soil volatilization to ambient air criteria, residential particulate inhalation criteria, and residential volatilization to indoor air criteria (MDEQ 2002).*

*The screening criteria for on-site groundwater are the Michigan Part 201 generic groundwater contact criteria and industrial drinking water criteria (MDEQ 2002). On-site groundwater data are also evaluated using site-specific industrial volatilization to indoor air criteria. Although some constituents have groundwater concentrations higher than the drinking water criteria, there is no known active drinking water or industrial production well at or near the Facility; potable water is supplied by the City of Flint. The screening criteria for off-site groundwater are the Part 201 generic groundwater contact criteria and residential drinking water criteria. Off-site groundwater data are also evaluated using site-specific residential vapor intrusion criteria.*

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3. Are there **complete pathways** between “contamination” and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

<b>“Contaminated” Media</b>	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food <sup>3</sup>
Groundwater	No	No	No	Yes			No
Air (indoors)	--	--	--				
Soil (surface, e.g., <2 ft)	No	No	No	Yes	No	No	No
<del>Surface Water</del>	--	--			--	--	--
<del>Sediment</del>	--	--			--	--	--
Soil (subsurface e.g., >2 ft)				Yes			
Air (outdoors)	--	--	--	--	--		No

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors’ spaces for Media which are not “contaminated” as identified in #2 above.
2. Enter “yes” or “no” for potential “completeness” under each “Contaminated” Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential “Contaminated” Media - Human Receptor combinations (Pathways) do not have check spaces (“  ”). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

- \_\_\_\_\_ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter “YE” status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).
- X** \_\_\_\_\_ If yes (pathways are complete for any “Contaminated” Media - Human Receptor combination) - continue after providing supporting explanation.
- \_\_\_\_\_ If unknown (for any “Contaminated” Media - Human Receptor combination) - skip to #6 and enter “IN” status code..

Rationale and Reference(s):

<sup>3</sup> Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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*As discussed in Section 2.3 of the EI report, contaminated soil is covered by pavement or gravel, or is located at depth, so exposure of workers engaged in routine activities is not expected. However, potential exposure of workers to soil during subsurface construction activities is possible.*

*Potential exposure of workers via direct contact with LNAPL during subsurface construction activities is possible at AOIs 13, 22, and 50. In addition, routine workers at these AOIs could be exposed to constituents in the subsurface LNAPLs via volatilization and assumed migration through building foundations into indoor air.*

*Existing information indicates that the Facility and the surrounding area obtain potable water from the City of Flint and do not rely on the local groundwater as a potable water supply. Currently, the only potential for exposure to groundwater is during subsurface construction activities that extend into the water table.*

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4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be “**significant**”<sup>4</sup> (i.e., potentially “unacceptable” because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable “levels” (used to identify the “contamination”); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable “levels”) could result in greater than acceptable risks)?

- X** If no (exposures can not be reasonably expected to be significant (i.e., potentially “unacceptable” for any complete exposure pathway) - skip to #6 and enter “YE” status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”
- \_\_\_\_\_ If yes (exposures could be reasonably expected to be “significant” (i.e., potentially “unacceptable” for any complete exposure pathway) - continue after providing a description (of each potentially “unacceptable” exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”
- \_\_\_\_\_ If unknown (for any complete pathway) - skip to #6 and enter “IN” status code

Rationale and Reference(s):

*As discussed in Section 2.4 and 2.5 of the EI report, the potential for current exposure to “contaminated” media is limited to potential exposure of workers to constituents in soil, groundwater, and LNAPLs during occasional subsurface construction activities, and to routine workers who could be exposed to constituents in the subsurface LNAPLs via volatilization and assumed migration through building foundations into indoor air. When the magnitude of potential exposures and current site-specific conditions are considered, the concentrations of constituents in these media do not present a significant exposure (see Tables 2-4 and 2-5, and the attachment to Appendix C, of the EI report). Therefore, the data collected at the Facility support a determination that all current human exposures to “contamination” at the Facility are under control.*

<sup>4</sup> If there is any question on whether the identified exposures are “significant” (i.e., potentially “unacceptable”) consult a human health Risk Assessment specialist with appropriate education, training and experience.

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5. Can the “significant” **exposures** (identified in #4) be shown to be within **acceptable** limits?

- \_\_\_\_\_ If yes (all “significant” exposures have been shown to be within acceptable limits) - continue and enter “YE” after summarizing and referencing documentation justifying why all “significant” exposures to “contamination” are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).
- \_\_\_\_\_ If no (there are current exposures that can be reasonably expected to be “unacceptable”) - continue and enter “NO” status code after providing a description of each potentially “unacceptable” exposure.
- \_\_\_\_\_ If unknown (for any potentially “unacceptable” exposure) - continue and enter “IN” status code

Rationale and Reference(s):

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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

**YE** YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the Delphi Energy & Chassis Systems Dort Highway facility, EPA ID # MID 005 356 647, located at 1300 North Dort Highway, Flint, Michigan under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

       NO - "Current Human Exposures" are NOT "Under Control."

       IN - More information is needed to make a determination.

Completed by \_\_\_\_\_ Date \_\_\_\_\_  
(signature)  
(print)  
(title)

Supervisor \_\_\_\_\_ Date \_\_\_\_\_  
(signature)  
(print)  
(title)  
(EPA Region or State)

Locations where References may be found:

- *Current Conditions Report (H&A 2002)*
- *RFI Work Plan (H&A 2003a)*
- *RFI Work Plan Addendum No.1 (H&A 2003b)*
- *Field Event #1 Data Report (H&A 2003c)*
- *Field Event #2 Data Report (H&A 2003d)*
- *Due Care Plan (H&A 2003e)*

Contact telephone and e-mail numbers

(name) \_\_\_\_\_  
(phone #) \_\_\_\_\_  
(e-mail) \_\_\_\_\_

**FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.**

## **Appendix B: Background Soil Concentrations**

## **APPENDIX B**

### **Background Soil Concentrations**

Background soil samples were collected during the RFI to characterize naturally occurring levels of metals in soil at the Facility. Consistent with the RFI Work Plan and the RFI Work Plan Addendum #1, background soil samples were collected from nine locations where no manufacturing or management of production materials or wastes is known to have occurred. The locations where the background soil samples were collected are listed on Table B-1 and shown on Figure 2 of the Field Event #2 Data Report. At each location, one sample was collected from 0 to 2 ft bgs. Deeper samples, up to 18 ft bgs, were also collected at these locations but are not included in the calculations because these depths represent soil that would be rarely, if ever, encountered as part of background exposures to metals in soil. The boring logs for these samples and the analytical data were provided in the Field Event #2 Data Report (H&A 2003d).

The concentrations of metals in the samples from the 0 to 2 ft bgs interval are the most representative of background exposures to metals in soil because the general population encounters soil from this interval more often than deeper soil. The metal concentrations in background soil from this interval are summarized in Table B-1, which also includes summary statistics describing the concentration distributions and the 95% upper confidence limits (UCLs) on the means for site-specific background metals.

The upper confidence limits presented on this table are nonparametric bootstrap confidence limits on the mean (Efron and Tibshirani 1998) calculated from 4,000 bootstrap replications and at a 0.05 level of significance. Nonparametric bootstrap statistical limits are more reliable than parametric statistical limits because, unlike parametric limits, they do not rely on assumptions about distribution shapes that are often difficult to justify.

Table B-1 summarizes the upper confidence limits on the average background levels of metals at the Facility. Concentrations of metals in soil at an AOI that are below these levels are considered to be within background and not site-related; concentrations higher than these levels are considered site-related. Table B-2 presents the cumulative cancer risks and hazard quotients that are associated with the naturally-occurring background levels, based on the exposure and

toxicity assumptions that USEPA Region 9 (2002) used in deriving its Preliminary Remediation Goals (PRGs). These background levels of risks are not included in estimates of site-related risks.

**Table B-1: Metal Concentrations in Background Soil from 0 to 2 ft bgs**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

		Al	Sb	As	Ba	Be	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Ni	Se	Ag	Tl	V	Zn
Sample ID	Location ID	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
0722-051302-1438	MW-4601D	7780	0.29 U	8.7	79.8	0.34	0.240	15.9	5.7	32.2	16400	81.2	328	0.11	16.2	0.18 U	0.090 U	0.66 J	19.8	112
0722-051302-1130	MW-4604D	4290	0.59	4.7	38.8	0.069 J	0.150	9.5	2.7	11.2	8730	29.4	147	0.033 J	7.7	0.38 J	0.085 U	0.93	11.8	72.4
0766-051302-0945	MW-4605D	9500	0.74	5.6	51.1	0.21	0.055 J	16.1	6.0	23.2	15700	44.0	379	0.057 J	14.4	0.19 U	0.090 U	0.30 U	21.2	67.9
M06D-051303-1710	MW-4606D	4050	0.13 U	1.9	19	0.22	0.0090 U	3.6	1.6	2.8	2.0 U	11.8	72	0.0090 U	3.5	0.43 J	0.055 U	0.32 U	6.0	11.6
M08D-051203-1645	MW-4608D	3270	0.13 U	6.4	24.2	0.34	0.017 J	14.4	2.8	7.6	2.0 U	8.0	574	0.019 J	8.0	0.17 U	0.055 U	0.32 U	9.1	32.0
0722-051602-0850	MW-4610D	9890	0.29 U	8.1	74.2	0.45	2.9	17.5	6.6	100	20200	37.7	293	0.38	19.7	0.18 U	0.090 U	0.30 U	22.5	
0722-051602-1630	MW-4615S	1990	1.4	3.6	27.2	0.027 U	0.17	23.0	3.3	94.8	17600	24.7	240	0.14	17.3	0.19 U	0.090 U	0.30 U	7.0	79.7
0722-051302-1227	MW-4623S	9090	0.82	6.8	78.5	0.27	0.42	23.1	8.0	33	17800	122	884	0.087 J	17.6	0.19 U	0.090 U	0.30 U	21.6	125
631D-052003-1415	MW-4631D	3.1 U	0.59 J	5.7	41.9	0.34	0.032 J	9.5	5.7	9.2	12300	15.2	328	0.037 J	9.1	0.70	0.065 U	0.38 U	17.0	46.4
Count		9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	
Detected		8	5	9	9	8	8	9	9	9	7	9	9	8	9	3	2	9	8	
Maximum		9890	1.4	8.7	79.8	0.45	2.9	23.1	8.0	100	20200	122	884	0.38	19.7	0.70	0.090	0.93	22.5	125
0.95 Bootstrap UCL		7390	0.80	6.8	62	0.31	1.4	17.9	5.8	59.4	15500	67.8	521	0.19	15.3				18.3	90
0-2ft Background		7390	0.80	6.8	62	0.31	1.4	17.9	5.8	59.4	15500	67.8	521	0.19	15.3	0.70	1.0	0.93	18.3	90
Notes:																				
1.	Concentrations for nondetects (U-qualified data) are 0.5 the quantitation limits.																			
2.	The background values for selenium and thallium are the maximum detected concentrations.																			
3.	The background value for silver is the MDEQ default background value, as it was not detected in any background samples.																			
4.	The zinc concentration of 1880 mg/kg, from sample 0722-051602-0850, is suspected to be from a different data population and is excluded from UCL calculations.																			

**Table B-2: Cancer Risks and Hazard Quotients for Background Metals in Surface Soil  
Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Chem Group	Chemical	CASRN	Carc Class	Conc in Soil <sup>1</sup> (mg/kg)	Screening Criteria at 10 <sup>-6</sup> Risk (mg/kg)	Screening Criteria at HQ of 1 (mg/kg)	Cancer Risk	HQ
INORG	Aluminum	7429-90-5	D	7.39E+03		9.2E+05		8.0E-03
INORG	Antimony	7440-36-0		8.03E-01		4.1E+02		2.0E-03
INORG	Arsenic	7440-38-2	A	6.80E+00	1.6E+00	2.6E+02	4.2E-06	2.6E-02
INORG	Barium	7440-39-3	D	6.20E+01		6.7E+04		9.3E-04
INORG	Beryllium	7440-41-7	B1	3.14E-01	2.2E+03	1.9E+03	1.4E-10	1.7E-04
INORG	Cadmium	7440-43-9	B1	1.36E+00	3.0E+03	4.5E+02	4.5E-10	3.0E-03
INORG	Chromium (total)	7440-47-3		1.79E+01	4.5E+02	2.5E+03	4.0E-08	7.2E-03
INORG	Cobalt	7440-48-4	B1	5.82E+00	1.9E+03	1.3E+04	3.1E-09	4.5E-04
INORG	Copper	7440-50-8	D	5.94E+01		4.1E+04		1.4E-03
INORG	Iron	7439-89-6	D	1.55E+04		3.1E+05		5.0E-02
INORG	Lead	7439-92-1	B2	6.78E+01		7.5E+02		
INORG	Manganese	7439-96-5	D	5.21E+02		1.9E+04		2.7E-02
INORG	Mercury	7439-97-6	D	1.91E-01		1.4E+01		1.4E-02
INORG	Nickel	7440-02-0	A	1.53E+01		2.0E+04		7.7E-04
INORG	Selenium	7782-49-2	D	7.00E-01		5.1E+03		1.4E-04
INORG	Silver	7440-22-4	D	1.00E+00		5.1E+03		2.0E-04
INORG	Thallium	7440-28-0		9.30E-01		6.8E+01		1.4E-02
INORG	Vanadium	7440-62-2		1.83E+01		7.2E+03		2.5E-03
INORG	Zinc	7440-66-6	D	8.99E+01		3.1E+05		2.9E-04
						<b>Sum</b>	<b>4E-06</b>	<b>2E-01</b>
<b>Notes:</b>								
The values are the surface soil background metals concentrations in Table B-1.								
Only metals analyzed for in background samples are shown.								
Lead is evaluated using EPA criterion based on blood-lead modeling, and therefore has no cancer or HQ calculation.								

## **Appendix C: Vapor Intrusion Calculations**

## APPENDIX C

### Vapor Intrusion Calculations

#### **1.0 Vapor Intrusion Criteria for Soil and Groundwater**

Site-specific criteria for soil (on-site) and groundwater (on-site and off-site) are based on the assumed migration of vapor from soil or groundwater into a building are derived using a model recommended by USEPA (2003) for screening evaluations. The model is described in detail by Johnson and Ettinger (1991), USEPA (2003), and MDEQ (2002), and thus, is not repeated here. The input parameters used and the calculation of the criteria are shown in the attachment to this appendix, and are discussed below.

#### **1.1 Soil Properties**

As shown in the Field Event #2 Data Report (H&A 2003d), soil types at the Facility include sand, silt, and clay. Among the seven borings at which geotechnical data were collected during the RFI, only one boring (VHC-4001) did not have silt or clay in the vadose zone; the other six borings all have silt and/or clay soil in the vadose zone at various depths and thicknesses. As a conservative assumption, the grain-size distribution and bulk density data for boring VHC-4001 are used in the Rosetta model (Schaap 1999) for estimating input parameters that relate to soil-water retention.

The estimated soil-water retention parameters are shown in the attachment to this appendix, and are used with a conservative estimate of the depth to groundwater (1.25 m for slab-on-grade building, and 0.44 m for building with basement) in the HYDRUS model (Vogel et al. 1996) to simulate soil-water retention in the unsaturated zone. This approach is often preferred over direct soil moisture measurements because of measurement uncertainties and variations of soil moisture with time and depth (USEPA 2003). Soil vapor permeability is conservatively estimated from the highest site-specific measurement of hydraulic conductivity (sand from VHC-4001).

#### **1.2 Building Characteristics**

Assumptions for characteristics of on-site (industrial) and off-site (residential) buildings are based on default values from MDEQ (2002). This approach is highly conservative for evaluating existing buildings at the Facility, because the MDEQ's assumed industrial building size is much

smaller than the size of the main on-site buildings, and overestimates indoor air concentrations from vapor intrusion. This approach is also conservative for evaluating existing off-site buildings near the Facility, because the MDEQ's assumed residential building characteristics are conservative for evaluating the off-site industrial buildings located near the Facility.

### **1.3 Inhalation Benchmarks**

The industrial criteria are calculated based on occupational inhalation exposure limits, and the residential criteria are calculated based on inhalation toxicity values. The occupational inhalation exposure limits are exposure limits for air contaminants as established in the Michigan Occupational Health Standards (MICIS 2001), permissible exposure limits (PELs) established by the Occupational Safety and Health Administration (OSHA) (NIOSH 1997), and threshold limit values (TLVs) recommended by the American Conference of Government Industrial Hygienists (ACGIH 2003) for chemicals without Michigan exposure limits or federal PELs. These inhalation benchmarks are shown in the attachment to this appendix.

### **2.0 Vapor Intrusion Calculations for LNAPL**

At AOIs 13, 22, and 50, conservative estimates of indoor air concentrations resulting from potential volatilization and migration of LNAPL constituents through cracks in building foundations is calculated using the mathematical modeling approach discussed in Section 1 for derivation of vapor intrusion criteria for groundwater, except source vapor concentrations are calculated using Raoult's law (instead of Henry's law). Specifically, vapor concentrations in equilibrium with LNAPLs are calculated as follows:

$$C_{i,\text{source}} = \frac{VP_i \cdot MW_{\text{NAPL}}}{R \cdot T} C_{i,\text{NAPL}} \left( \frac{\text{kg}}{10^3 \text{g}} \right)$$

where:

- |                       |   |  |
|-----------------------|---|--|
| $C_{i,\text{source}}$ | = | vapor concentration of chemical $i$ ( $\text{mg}/\text{m}^3$ )       |
| $VP_i$                | = | vapor pressure for chemical $i$ (mm Hg)                              |
| $MW_{\text{NAPL}}$    | = | molecular weight of NAPL (g/mole)                                    |
| $R$                   | = | gas constant, $0.062361 \text{ mm Hg m}^3/\text{mole}^\circ\text{K}$ |
| $T$                   | = | absolute temperature ( $^\circ\text{K}$ )                            |
| $C_{i,\text{NAPL}}$   | = | LNAPL concentration of chemical $i$ ( $\text{mg}/\text{kg}$ )        |

Calculations of the source vapor concentrations are shown in the attachment to this appendix.

Estimated indoor air concentrations are calculated from the source vapor concentrations using the same attenuation coefficients used in deriving the vapor intrusion criteria for on-site

groundwater. Specifically, these attenuation coefficients are calculated based on the soil properties discussed in Section 1.1 and the characteristics for the generic commercial/industrial building discussed in Section 1.2. The estimated indoor air concentrations are then compared to the occupational inhalation limits discussed in Section 1.3. The estimated indoor air concentrations and the ratios of these concentrations to the occupational inhalation limits are shown in the attachment to this appendix.

### **3.0 Significance of Potential Contribution to Indoor Air Concentrations**

As shown in the tables that accompany this appendix, no soil or groundwater concentrations, respectively, exceed the site-specific volatilization to indoor air criteria that are based on occupational air standards. To ensure that estimated indoor air concentrations from assumed vapor intrusion do not contribute materially to total indoor air concentrations in existing buildings at the Facility, which would include contributions from indoor occupational sources, the ratios of soil and groundwater concentrations to the site-specific vapor intrusion criteria were further evaluated. In this evaluation, the ratios are used as equivalent ratios of indoor air concentrations from assumed vapor intrusion to the inhalation exposure limits.

As shown in the tables that accompany this appendix, the ratios of the soil and groundwater concentrations to the site-specific vapor intrusion criteria were summed for each AOI. These sums show that no AOI has a sum that is higher than approximately 0.02, which means that contributions from vapor intrusion, if assumed to exist, would be insignificant. It should be noted that the AOI with the highest sum of ratios is AOI 11, and the soil characterization data that were used to calculate this sum are all at outdoor locations.

Contributions to indoor air concentrations by assumed vapor intrusion from the LNAPLs at AOIs 13, 22, and 50 were evaluated similarly. The ratios of the estimated indoor air concentration from LNAPL to occupational inhalation limits were summed. As shown in the attached tables, the sums are no higher than approximately 0.00001, which means that contributions from LNAPL vapor intrusion are insignificant, even if added to contributions from assumed soil and groundwater vapor intrusion at these AOIs.

**Attachment to Appendix C**

Occupational Criteria Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan											
Chem Group	Chemical	CASRN	MIOSHA-TWA (mg/m <sup>3</sup> )			OSHA PEL (mg/m <sup>3</sup> )			TLV-TWA (mg/m <sup>3</sup> )		
			Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes
VOC	Acetone	67-64-1	1.8E+03	73		2.4E+03	46		1.2E+03	47	
VOC	Benzene	71-43-2	3.2E+00	73		3.2E+00	46		1.6E+00	47	
VOC	Bromomethane	74-83-9							3.9E+00	47	
VOC	2-Butanone	78-93-3	5.9E+02	73		5.9E+02	46		5.9E+02	47	
VOC	Carbon Disulfide	75-15-0	1.2E+01	73					3.1E+01	47	
VOC	Carbon Tetrachloride	56-23-5	1.3E+01	73		6.3E+01	46		3.1E+01	47	
VOC	Chlorobenzene	108-90-7	3.5E+02	73		3.5E+02	46		4.6E+01	47	
VOC	Chloroethane	75-00-3				2.6E+03	46		2.6E+02	47	
VOC	Chloroform	67-66-3	9.8E+00	73					4.9E+01	47	
VOC	Cumene	98-82-8				2.5E+02	46		2.5E+02	47	
VOC	Cyclohexane	110-82-7				1.1E+03	46		3.4E+02	47	
VOC	1,2-Dichlorobenzene	95-50-1							1.5E+02	47	
VOC	1,4-Dichlorobenzene	106-46-7	4.5E+02	73		4.5E+02	46		6.0E+01	47	
VOC	1,1-Dichloroethane	75-34-3	4.0E+02	73		4.0E+02	46		4.0E+02	47	
VOC	1,2-Dichloroethane	107-06-2	4.0E+00	73					4.0E+01	47	
VOC	1,1-Dichloroethene	75-35-4							2.0E+01	47	
VOC	1,2-Dichloroethene (total)	540-59-0	7.9E+02	73		7.9E+02	46		7.9E+02	47	
VOC	cis-1,2-Dichloroethene	156-59-2							7.9E+02	47	
VOC	trans-1,2-Dichloroethene	156-60-5							7.9E+02	47	
VOC	Ethyl Benzene	100-41-4	4.4E+02	73		4.4E+02	46		4.3E+02	47	
VOC	Methyl Acetate	79-20-9				6.1E+02	46		6.1E+02	47	
VOC	Methyl tert-butyl ether	1634-04-4							1.8E+02	47	
VOC	4-Methyl-2-pentanone	108-10-1				4.1E+02	46		2.0E+02	47	
VOC	Methylcyclohexane	108-87-2				2.0E+03	46		1.6E+03	47	
VOC	Methylene Chloride	75-09-2	8.7E+01	73		8.7E+01	46		1.7E+02	47	
VOC	Styrene	100-42-5	2.2E+02	73		4.3E+02	46		8.5E+01	47	
VOC	Tetrachloroethene	127-18-4	1.7E+02	73		6.8E+02	46		1.7E+02	47	
VOC	Toluene	108-88-3	3.8E+02	73		7.5E+02	46		1.9E+02	47	
VOC	1,2,4-Trichlorobenzene	120-82-1									
VOC	1,1,1-Trichloroethane	71-55-6	1.9E+03	73		1.9E+03	46		1.9E+03	47	
VOC	1,1,2-Trichloroethane	79-00-5	4.5E+01	73		4.5E+01	46		5.5E+01	47	
VOC	Trichloroethene	79-01-6	2.7E+02	73		5.4E+02	46		2.7E+02	47	
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1				7.6E+03	46		7.7E+03	47	
VOC	1,2,4-Trimethylbenzene	95-63-6	1.3E+02	73							
VOC	Vinyl Chloride	75-01-4	2.5E+00	73		2.6E+00	46		2.6E+00	47	
VOC	Xylenes (total)	1330-20-7	4.4E+02	73		4.4E+02	46		4.3E+02	47	
SVOC	Acenaphthene	83-32-9									

Occupational Criteria Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan											
Chem Group	Chemical	CASRN	MIOSHA-TWA (mg/m <sup>3</sup> )			OSHA PEL (mg/m <sup>3</sup> )			TLV-TWA (mg/m <sup>3</sup> )		
			Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes
SVOC	Acenaphthylene	208-96-8									
SVOC	Anthracene	120-12-7									
SVOC	Benzo(a)anthracene	56-55-3									
SVOC	Benzo(a)pyrene	50-32-8									
SVOC	Benzo(b)fluoranthene	205-99-2									
SVOC	Benzo(g,h,i)perylene	191-24-2									
SVOC	Benzo(k)fluoranthene	207-08-9									
SVOC	Biphenyl	92-52-4				1.0E+00	46		1.3E+00	47	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7				5.0E+00	46		5.0E+00	47	
SVOC	Butylbenzylphthalate	85-68-7									
SVOC	Caprolactam	105-60-2							5.0E+00	47	
SVOC	Carbazole	86-74-8									
SVOC	Chrysene	218-01-9									
SVOC	Dibenz(a,h)anthracene	53-70-3									
SVOC	Dibenzofuran	132-64-9									
SVOC	Diethylphthalate	84-66-2	5.0E+00	73					5.0E+00	47	
SVOC	Di-n-butylphthalate	84-74-2				5.0E+00	46		5.0E+00	47	
SVOC	Fluoranthene	206-44-0									
SVOC	Fluorene	86-73-7									
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5									
SVOC	2-Methylnaphthalene	91-57-6									
SVOC	Methylphenol (total)	1319-77-3				2.2E+01	46		2.2E+01	47	
SVOC	Naphthalene	91-20-3	5.0E+01	73		5.0E+01	46		5.2E+01	47	
SVOC	Pentachlorophenol	87-86-5	5.0E-01	73		5.0E-01	46		5.0E-01	47	
SVOC	Phenanthrene	85-01-8									
SVOC	Phenol	108-95-2	1.9E+01	73		1.9E+01	46		1.9E+01	47	
SVOC	Pyrene	129-00-0									
P/PCB	PCBs (total)	1336-36-3				5.0E-01	46	351	5.0E-01	47	351
INORG	Mercury	7439-97-6							2.5E-02	47	

<b>Occupational Criteria</b> <b>Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan</b>	
<b>References:</b>	
46	National Institute for Occupational Safety and Health (NIOSH). 1997. NIOSH Pocket Guide to Chemical Hazards. DHHS. 97-140. June.
47	American Conference of Government Industrial Hygienists. 2003. 2003 TLVs and BEIs. ISBN: 1-882417-40-2.
73	Michigan Department of Consumer and Industry Services. 2001. Occupational Health Standards; Part 301 Air Contaminants.
<b>Notes:</b>	
351	ENVIRON used Aroclor 1254 [CASRN 11097-69-1] value from the indicated reference as a surrogate for Polychlorinated biphenyls [CASRN 1336-36-3].

Toxicity Values Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan												
Chem Group	Chemical	CASRN	Cancer Group			URF (mg/m <sup>3</sup> ) <sup>-1</sup>			RfC (mg/m <sup>3</sup> )			
			Value	Ref	Note	Value	Ref	Notes	Value	UF	Ref	Notes
VOC	Acetone	67-64-1	D	1					3.5E-01	1,000	1	4,44
VOC	Benzene	71-43-2	A	1		7.8E-03	1	60	3.0E-02	300	1	
VOC	Bromomethane	74-83-9	D	1					5.0E-03	100	1	
VOC	2-Butanone	78-93-3	D	1					1.0E+00	3,000	1	
VOC	Carbon Disulfide	75-15-0							7.0E-01	30	1	
VOC	Carbon Tetrachloride	56-23-5	B2	1		1.5E-02	1		2.0E-03	3,000	33	
VOC	Chlorobenzene	108-90-7	D	1					6.0E-02	1,000	103	
VOC	Chloroethane	75-00-3							1.0E+01	300	1	
VOC	Chloroform	67-66-3	B2	1		2.3E-02	1		5.0E-02	100	117	
VOC	Cumene	98-82-8	D	1					4.0E-01	1,000	1	
VOC	Cyclohexane	110-82-7							2.0E+01		4	44
VOC	1,2-Dichlorobenzene	95-50-1	D	1					2.0E-01	1,000	2	3
VOC	1,4-Dichlorobenzene	106-46-7	C	2		6.3E-03	3	45	8.0E-01	100	1	
VOC	1,1-Dichloroethane	75-34-3	C	1					5.0E-01	1,000	2	3
VOC	1,2-Dichloroethane	107-06-2	B2	1		2.6E-02	1		5.0E-03	3,000	102	92
VOC	1,1-Dichloroethene	75-35-4	C	1					2.0E-01	30	1	
VOC	1,2-Dichloroethene (total)	540-59-0							3.2E-02	1,000	2	4,44
VOC	cis-1,2-Dichloroethene	156-59-2	D	1					3.5E-02	3,000	2	6,4,44
VOC	trans-1,2-Dichloroethene	156-60-5							7.0E-02	1,000	1	4,44
VOC	Ethyl Benzene	100-41-4	D	1					1.0E+00	300	1	
VOC	Methyl Acetate	79-20-9							3.5E+00	1,000	2	4,44
VOC	Methyl tert-butyl ether	1634-04-4				1.0E-04	4	45	3.0E+00	100	1	
VOC	4-Methyl-2-pentanone	108-10-1	ID	1					3.0E+00	300	1	
VOC	Methylcyclohexane	108-87-2							3.0E+00	100	2	
VOC	Methylene Chloride	75-09-2	B2	1		4.7E-04	1		3.0E+00	100	2	
VOC	Styrene	100-42-5							1.0E+00	30	1	
VOC	Tetrachloroethene	127-18-4	C-B2	77		3.1E-03	77		4.0E-01		109	94
VOC	Toluene	108-88-3	D	1					4.0E-01	300	1	
VOC	1,2,4-Trichlorobenzene	120-82-1	D	1					2.0E-01	1,000	2	
VOC	1,1,1-Trichloroethane	71-55-6	D	1					2.2E+00	90	73	
VOC	1,1,2-Trichloroethane	79-00-5	C	1		1.6E-02	1		1.4E-02	1,000	1	4,44
VOC	Trichloroethene	79-01-6	C-B2	49	18	1.7E-03	49		2.1E-02	3,000	46	6, 97, 4,44
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1							1.1E+02	10	1	4,44
VOC	1,2,4-Trimethylbenzene	95-63-6							6.0E-03		3	44
VOC	Vinyl Chloride	75-01-4	A	1		8.8E-03	1	79	1.0E-01	30	1	
VOC	Xylenes (total)	1330-20-7	ID	1					1.0E-01	300	1	
SVOC	Acenaphthene	83-32-9							2.1E-01	3,000	1	4,44

Toxicity Values Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan											
Chem Group	Chemical	CASRN	Cancer Group			URF (mg/m <sup>3</sup> ) <sup>-1</sup>			RfC (mg/m <sup>3</sup> )		
			Value	Ref	Note	Value	Ref	Notes	Value	UF	Ref
SVOC	Acenaphthylene	208-96-8	D	1					1.1E-01	3,000	1
SVOC	Anthracene	120-12-7	D	1							2
SVOC	Benzo(a)anthracene	56-55-3	B2	1		2.1E-01	10	5,4,45			
SVOC	Benzo(a)pyrene	50-32-8	B2	1		8.9E-01	3	45			
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1		2.1E-01	10	5,4,45			
SVOC	Benzo(g,h,i)perylene	191-24-2	D	1					1.1E-01	3,000	1
SVOC	Benzo(k)fluoranthene	207-08-9	B2	1		2.1E-02	10	5,4,45			
SVOC	Biphenyl	92-52-4	D	1					1.8E-01	1,000	1
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	1		4.0E-03	3	45	7.0E-02	1,000	1
SVOC	Butylbenzylphthalate	85-68-7	C	1					7.0E-01	1,000	1
SVOC	Caprolactam	105-60-2							1.8E+00	100	1
SVOC	Carbazole	86-74-8	B2	2		5.7E-03	2	4,45			
SVOC	Chrysene	218-01-9	B2	1		2.1E-03	10	5,4,45			
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	1		2.1E+00	10	5,4,45			
SVOC	Dibenzofuran	132-64-9	D	1					7.0E-03		3
SVOC	Diethylphthalate	84-66-2	D	1					2.8E+00	1,000	1
SVOC	Di-n-butylphthalate	84-74-2	D	1							1
SVOC	Fluoranthene	206-44-0	D	1					1.4E-01	3,000	1
SVOC	Fluorene	86-73-7	D	1					1.4E-01	3,000	1
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1		2.1E-01	10	5,4,45			
SVOC	2-Methylnaphthalene	91-57-6	ID	119					3.0E-03	3,000	1
SVOC	Methylphenol (total)	1319-77-3									
SVOC	Naphthalene	91-20-3	C	1					3.0E-03	3,000	1
SVOC	Pentachlorophenol	87-86-5	B2	1		3.4E-02	1	4,45	1.1E-01	100	1
SVOC	Phenanthrene	85-01-8	D	1					1.1E-01	3,000	1
SVOC	Phenol	108-95-2	ID	1							1
SVOC	Pyrene	129-00-0	D	1					1.1E-01	3,000	1
P/PCB	PCBs (total)	1336-36-3	B2	1	15	5.7E-01	1	30,32,45	7.0E-05	300	1
INORG	Mercury	7439-97-6	D	1					3.0E-04	30	1

**Toxicity Values**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

**References:**

1	USEPA. Integrated Risk Information System (IRIS). On-line database.
2	USEPA. 1997. Health Effects Assessment Summary Tables (HEAST). FY-1997 Update. EPA 540/R-97-036. July.
3	USEPA. Region III. 2003. Risk-Based Concentration Table. April.
4	USEPA. Region IX. 2002. Preliminary Remediation Goal Table. October.
10	USEPA. 1993. Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons. EPA/600/2-93/089. July.
33	USEPA. NCEA. 1994. Risk Assessment Issue paper for: Derivation of a Provisional Inhalation RfC for Carbon Tetrachloride [CASRN 56-23-5]. April 11.
46	USEPA. NCEA. 1995. Risk Assessment Issue paper for: Provisional oral RfD for Trichloroethylene [CASRN 79-01-6].
49	USEPA. NCEA. 1995. Risk Assessment Issue paper for: Carcinogenicity Information for Trichloroethylene (TCE) [CASRN 79-01-6]. September 6.
73	USEPA. NCEA. 1999. Risk Assessment Issue paper for: Derivation of Provisional Chronic and Subchronic RfCs for 1,1,1-Trichloroethane [CASRN 71-55-6]. August 4.
77	USEPA. 2001. Risk Assessment Issue Paper for Carcinogenicity Information for Tetrachloroethylene (perchloroethylene, PERC) [CASRN 127-18-4]. December 20.
102	USEPA. NCEA. 1993. Risk Assessment Issue paper for: Derivation of a Provisional Inhalation RfC for 1,2-Dichloroethane [CASRN 107-06-2]. April 5.
103	USEPA. NCEA. 1998. Risk Assessment Issue Paper for: Derivation of a Provisional Chronic RfC for Chlorobenzene [CASRN 108-90-7]. September 18.
109	USEPA. NCEA. 1997. Risk Assessment Issue Paper for: Derivation of a Provisional RfC for Tetrachloroethylene (perchloroethylene, PERC) [CASRN 127-18-4]. June 20.
117	USEPA. NCEA. 2003. Risk Assessment Issue Paper for: Derivation of Provisional Subchronic and Chronic RfCs for Chloroform [CASRN 67-66-3]. January 23.

**Cancer Classes:**

A	Known Human Carcinogen-sufficient evidence of carcinogenicity in humans
B1	Human Carcinogen-limited evidence of carcinogenicity in humans
B2	Probable Human Carcinogen-sufficient evidence of carcinogenicity in animals with inadequate or lack of evidence in humans
C	Possible Human Carcinogen-limited evidence of carcinogenicity in animals and inadequate or lack of evidence in humans
D	Not classifiable as to human carcinogenicity
ID	Data Are Inadequate for An Assessment of Human Carcinogenic Potential

<b>Toxicity Values</b>	
<b>Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan</b>	
<b>Notes:</b>	
3	HEAST Alternate Method.
4	ENVIRON obtained value by route-to-route extrapolation.
5	Based on analogy to Benzo(a)pyrene [CASRN 50-32-8] using USEPA relative potency described in the indicated reference.
6	Under review, according to IRIS.
15	The IRIS for PCBs [1336-36-3] states that "Although... PCB congeners vary greatly as to their potency in producing biological effects, for purposes of this carcinogenicity assessment Aroclor 1260 is intended to be representative of all PCB.
18	Not verifiable, according to IRIS.
20	ENVIRON used Pyrene [CASRN 129-00-0] value from IRIS (reference 1) as a surrogate.
30	Upper-bound slope factor.
32	High risk & persistence tier. Use for: food chain exposure; sediment/soil ingestion; dust/aerosol inhalation; dermal exposure, if an absorption factor has been applied; presence of dioxin-like, tumor-promoting/persistent congeners; all early life exposures.
44	ENVIRON derived inhalation RfC from inhalation RfD value presented in the indicated reference, using standard USEPA methodology presented in HEAST.
45	ENVIRON derived inhalation URF from Inhalation Slope Factor value presented in the indicated reference, using standard USEPA methodology presented in HEAST.
60	IRIS provides a range of 2.2E-6 to 7.8E-6 (ug/m <sup>3</sup> )-1 as the Inhalation Unit Risk Factor (URF) for Benzene.
61	ENVIRON used Naphthalene [CASRN 91-20-3] value from indicated reference as a surrogate.
72	ENVIRON used Aroclor 1254 [CASRN 11097-69-1] value from the indicated reference as a surrogate for Polychlorinated biphenyls [CASRN 1336-36-3].
79	IRIS recommends an Inhalation Unit Risk(URF) for Vinyl Chloride of 4.4E-6 (ug/m <sup>3</sup> )-1 to account for continuous lifetime exposure during adulthood; a twofold increase to 8.8E-6 (ug/m <sup>3</sup> )-1 is recommended to account for continuous exposure from birth.
90	Inadequate data exist to derive a toxicity value, according to the indicated reference.
92	NCEA directed ENVIRON to use outdated value.
94	Two provisional RfC values are presented in the indicated reference (4E-1 and 6E-1 mg/m <sup>3</sup> ). Personal communication with NCEA indicated that either RfC is acceptable and the RfC should be chosen on a case-by-case basis.
97	ENVIRON used withdrawn source.
98	Route-to-route extrapolation is not appropriate, according to the indicated reference.

Physical and Chemical Properties																	
			K <sub>oc</sub> (L/kg)			K <sub>d</sub> (L/kg)			H (unitless)			D <sub>air</sub> (cm <sup>2</sup> /s)			D <sub>water</sub> (cm <sup>2</sup> /s)		
Chem Group	Chemical	CASRN	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes
VOC	Acetone	67-64-1	5.8E-01	44					1.6E-03	44		1.2E-01	44		1.1E-05	44	
VOC	Benzene	71-43-2	5.9E+01	44					2.3E-01	44		8.8E-02	44		9.8E-06	44	
VOC	Bromomethane	74-83-9	1.1E+01	44					2.6E-01	44		7.3E-02	44		1.2E-05	44	
VOC	2-Butanone	78-93-3	2.3E+00	65					2.3E-03	50	92	9.5E-02	36	27	1.0E-05	65	
VOC	Carbon Disulfide	75-15-0	4.6E+01	44					1.2E+00	44		1.0E-01	44		1.0E-05	44	
VOC	Carbon Tetrachloride	56-23-5	1.7E+02	44					1.3E+00	44		7.8E-02	44		8.8E-06	44	
VOC	Chlorobenzene	108-90-7	2.2E+02	44					1.5E-01	44		7.3E-02	44		8.7E-06	44	
VOC	Chloroethane	75-00-3	1.5E+01	3					3.6E-01	50	92	1.1E-01	36	27	1.5E-06	65	
VOC	Chloroform	67-66-3	4.0E+01	44					1.5E-01	44		1.0E-01	44		1.0E-05	44	
VOC	Cumene	98-82-8	3.3E+03	40					4.7E+01	50	92	6.5E-02	65		7.8E-06	65	
VOC	Cyclohexane	110-82-7							8.0E+00	50	92	1.1E-01	52		9.1E-06	52	
VOC	1,2-Dichlorobenzene	95-50-1	6.2E+02	44					7.8E-02	44		6.9E-02	44		7.9E-06	44	
VOC	1,4-Dichlorobenzene	106-46-7	6.2E+02	44					1.0E-01	44		6.9E-02	44		7.9E-06	44	
VOC	1,1-Dichloroethane	75-34-3	3.2E+01	44					2.3E-01	44		7.4E-02	44		1.1E-05	44	
VOC	1,2-Dichloroethane	107-06-2	1.7E+01	44					4.0E-02	44		1.0E-01	44		9.9E-06	44	
VOC	1,1-Dichloroethene	75-35-4	5.9E+01	44					1.1E+00	44		9.0E-02	44		1.0E-05	44	
VOC	1,2-Dichloroethene (total)	540-59-0	5.3E+01	44	81				3.9E-01	44	81	7.1E-02	44	81	1.2E-05	44	81
VOC	cis-1,2-Dichloroethene	156-59-2	3.6E+01	44					1.7E-01	44		7.4E-02	44		1.1E-05	44	
VOC	trans-1,2-Dichloroethene	156-60-5	5.3E+01	44					3.9E-01	44		7.1E-02	44		1.2E-05	44	
VOC	Ethyl Benzene	100-41-4	3.6E+02	44					3.2E-01	44		7.5E-02	44		7.8E-06	44	
VOC	Methyl Acetate	79-20-9	3.3E+00	65					3.5E-03	65		1.2E-01	65		1.1E-05	65	
VOC	Methyl tert-butyl ether	1634-04-4							5.5E-02	52		1.0E-01	52		1.1E-05	52	
VOC	4-Methyl-2-pentanone	108-10-1	1.2E+01	65					5.6E-03	50	92	7.5E-02	40		8.4E-06	65	
VOC	Methylcyclohexane	108-87-2							9.2E-01	52		9.0E-02	52		8.5E-06	52	
VOC	Methylene Chloride	75-09-2	1.2E+01	44					9.0E-02	44		1.0E-01	44		1.2E-05	44	
VOC	Styrene	100-42-5	7.8E+02	44					1.1E-01	44		7.1E-02	44		8.0E-06	44	
VOC	Tetrachloroethene	127-18-4	1.6E+02	44					7.5E-01	44		7.2E-02	44		8.2E-06	44	
VOC	Toluene	108-88-3	1.8E+02	44					2.7E-01	44		8.7E-02	44		8.6E-06	44	
VOC	1,2,4-Trichlorobenzene	120-82-1	1.8E+03	44					5.8E-02	44		3.0E-02	44		8.2E-06	44	
VOC	1,1,1-Trichloroethane	71-55-6	1.1E+02	44					7.1E-01	44		7.8E-02	44		8.8E-06	44	
VOC	1,1,2-Trichloroethane	79-00-5	5.0E+01	44					3.7E-02	44		7.8E-02	44		8.8E-06	44	
VOC	Trichloroethene	79-01-6	1.7E+02	44					4.2E-01	44		7.9E-02	44		9.1E-06	44	
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1.3E+03	40					2.0E+01	50	92	7.8E-02	40		8.2E-06	40	
VOC	1,2,4-Trimethylbenzene	95-63-6							2.3E-01	1		6.5E-02	65	108	7.9E-06	65	108
VOC	Vinyl Chloride	75-01-4	1.9E+01	44					1.1E+00	44		1.1E-01	44		1.2E-05	44	
VOC	Xylenes (total)	1330-20-7	3.9E+02	44					2.8E-01	44		7.8E-02	44		8.7E-06	44	
SVOC	Acenaphthene	83-32-9	7.1E+03	44					6.4E-03	44		4.2E-02	44		7.7E-06	44	
SVOC	Acenaphthylene	208-96-8	4.9E+03	34					4.6E-03	50	92						
SVOC	Anthracene	120-12-7	3.0E+04	44					2.7E-03	44		3.2E-02	44		7.7E-06	44	
SVOC	Benzo(a)anthracene	56-55-3	4.0E+05	44					1.4E-04	44		5.1E-02	44		9.0E-06	44	
SVOC	Benzo(a)pyrene	50-32-8	1.0E+06	44					4.6E-05	44		4.3E-02	44		9.0E-06	44	
SVOC	Benzo(b)fluoranthene	205-99-2	1.2E+06	44					4.6E-03	44		2.3E-02	44		5.6E-06	44	
SVOC	Benzo(g,h,i)perylene	191-24-2	1.6E+06	3					5.8E-06	50	92	2.3E-02	52		5.2E-05	52	
SVOC	Benzo(k)fluoranthene	207-08-9	1.2E+06	44					3.4E-05	44		2.3E-02	44		5.6E-06	44	
SVOC	Biphenyl	92-52-4							1.2E-02	50	92						
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	1.5E+07	44					4.2E-06	44		3.5E-02	44		3.7E-06	44	
SVOC	Butylbenzylphthalate	85-68-7	5.8E+04	44					5.2E-05	44		1.7E-02	44		4.8E-06	44	
SVOC	Caprolactam	105-60-2															
SVOC	Carbazole	86-74-8	3.4E+03	44					6.3E-07	44		3.9E-02	44		7.0E-06	44	
SVOC	Chrysene	218-01-9	4.0E+05	44					3.9E-03	44		2.5E-02	44		6.2E-06	44	
SVOC	Dibenz(a,h)anthracene	53-70-3	3.8E+06	44					6.0E-07	44		2.0E-02	44		5.2E-06	44	
SVOC	Dibenzofuran	132-64-9							5.1E-04	50	92	2.7E-02	52		5.9E-06	52	
SVOC	Diethylphthalate	84-66-2	2.9E+02	44					1.9E-05	44		2.6E-02	44		6.4E-06	44	

Physical and Chemical Properties																		
			Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan															
Chem Group	Chemical	CASRN	K <sub>oc</sub> (L/kg)			K <sub>d</sub> (L/kg)			H (unitless)			D <sub>air</sub> (cm <sup>2</sup> /s)			D <sub>water</sub> (cm <sup>2</sup> /s)			
			Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	
SVOC	Di-n-butylphthalate	84-74-2	3.4E+04	44					3.9E-08	44		4.4E-02	44		7.9E-06	44		
SVOC	Fluoranthene	206-44-0	1.1E+05	44					6.6E-04	44		3.0E-02	44		6.4E-06	44		
SVOC	Fluorene	86-73-7	1.4E+04	44					2.6E-03	44		3.6E-02	44		7.9E-06	44		
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	3.5E+06	44					6.6E-05	44		1.9E-02	44		5.7E-06	44		
SVOC	2-Methylnaphthalene	91-57-6							2.1E-02	50	92	4.8E-02	52		7.8E-06	52		
SVOC	Methylphenol (total)	1319-77-3	8.6E+01	40	99				3.5E-05	50	92,99	7.4E-02	40	99	9.3E-06	65	99	
SVOC	Naphthalene	91-20-3	2.0E+03	44					2.0E-02	44		5.9E-02	44		7.5E-06	44		
SVOC	Pentachlorophenol	87-86-5	5.9E+02	44	43				1.0E-06	44		5.6E-02	44		6.1E-06	44		
SVOC	Phenanthrene	85-01-8	1.4E+04	3					9.5E-04	50	92	3.3E-02	65		7.5E-06	65		
SVOC	Phenol	108-95-2	2.9E+01	44					1.6E-05	44		8.2E-02	44		9.1E-06	44		
SVOC	Pyrene	129-00-0	1.1E+05	44					4.5E-04	44		2.7E-02	44		7.2E-06	44		
P/PCB	PCBs (total)	1336-36-3	3.1E+05	44					1.1E-01	50	94	8.0E-02	40		1.0E-05	40		
INORG	Mercury	7439-97-6		65	48	1.0E+03	65		2.9E-01	65		3.1E-02	44		6.3E-06	44		

<b>Physical and Chemical Information</b>	
<b>Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan</b>	
<b>References:</b>	
1	USEPA. 1992. Handbook of RCRA Ground-Water Monitoring Constituents. Chemical and Physical Properties (40 CFR Part 264, Appendix IX). EPA-530-R-92-022. September.
3	USEPA. 1982. Mabey, W., J. Smith, R. Podoll, H. Johnson, T. Mill, T. Chou, J. Gates, I. Partridge, and D. Vandenberg. Aquatic Fate Process Data for Organic Priority Pollutants. Final. Office of Water Reg. & Standards. EPA-440/4-81-014. December.
34	USEPA. 1994. Technical Background for Soil Screening Guidance. Office of Emergency and Remedial Response. EPA/540/R-94/106. Review Draft. November.
36	USEPA. 1988. Superfund Exposure Assessment Manual (SEAM). Office of Remedial Response. OSWER Directive 9285.5-1. EPA/540/1-88-001 Pre-publication Edition. April.
40	Research Triangle Institute, Center for Environmental Analysis. 1995. Supplemental Technical Support Document for Hazardous Waste Identification Rule: Risk Assessment for Human and Ecological Receptors--Volume 1, TABLE A-1. November 1995.
44	USEPA. 1996. Soil Screening Guidance: Technical Background Document and User Guide. Office of Emergency and Remedial Response. EPA/540/R-95/128. May.
50	USEPA. 1997. Superfund Chemical Data Matrix (SCDM). Office of Emergency and Remedial Response. September 12.
52	USEPA. 1997. CHEM 9 Compound Properties Estimation and Data. Version 1.00. Office of Air Quality Planning and Standards. July.
65	USEPA. July 1998. Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities.
<b>Notes:</b>	
27	Diffusivity value at 30 degrees Celcius.
43	pH associated with value is 6.8.
48	Not Available or Not Applicable
81	ENVIRON used the value for trans-1,2-Dichloroethene [CASRN 156-60-5] as a surrogate.
92	Indicated source cites CHEMFATE.
94	Indicated source cites LIVECHEM.
99	ENVIRON used the value for 3-Methylphenol [CASRN 108-39-4] value as a surrogate.
108	ENVIRON used the value for 1,3,5-Trimethylbenzene [CASRN 108-67-8] from the indicated reference as a surrogate.

**Soil Moisture Profile below Slab on Grade Building**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

<b>z (m)</b>	<b><math>\theta_T</math></b>	<b><math>\theta_w</math></b>
0.000	0.382	0.382
0.001	0.382	0.382
0.004	0.382	0.382
0.007	0.382	0.382
0.010	0.382	0.381
0.014	0.382	0.380
0.019	0.382	0.379
0.024	0.382	0.378
0.029	0.382	0.377
0.034	0.382	0.375
0.040	0.382	0.373
0.046	0.382	0.371
0.053	0.382	0.368
0.060	0.382	0.365
0.067	0.382	0.362
0.074	0.382	0.359
0.081	0.382	0.355
0.089	0.382	0.351
0.097	0.382	0.347
0.105	0.382	0.343
0.114	0.382	0.339
0.122	0.382	0.334
0.131	0.382	0.330
0.140	0.382	0.325
0.150	0.382	0.321
0.159	0.382	0.316
0.169	0.382	0.312
0.179	0.382	0.307
0.189	0.382	0.302
0.199	0.382	0.298
0.209	0.382	0.293
0.220	0.382	0.289
0.230	0.382	0.284
0.241	0.382	0.280
0.252	0.382	0.276
0.263	0.382	0.271
0.275	0.382	0.267
0.286	0.382	0.263
0.298	0.382	0.259
0.310	0.382	0.255
0.322	0.382	0.251
0.334	0.382	0.248
0.346	0.382	0.244
0.359	0.382	0.240
0.371	0.382	0.237
0.384	0.382	0.234
0.397	0.382	0.230
0.410	0.382	0.227
0.423	0.382	0.224
0.436	0.382	0.221
0.450	0.382	0.218

**Soil Moisture Profile below Slab on Grade Building**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

<b>z (m)</b>	<b><math>\theta_T</math></b>	<b><math>\theta_w</math></b>
0.463	0.382	0.215
0.477	0.382	0.212
0.491	0.382	0.209
0.505	0.382	0.207
0.519	0.382	0.204
0.533	0.382	0.201
0.548	0.382	0.199
0.562	0.382	0.196
0.577	0.382	0.194
0.591	0.382	0.192
0.606	0.382	0.190
0.621	0.382	0.187
0.636	0.382	0.185
0.651	0.382	0.183
0.667	0.382	0.181
0.682	0.382	0.179
0.698	0.382	0.177
0.713	0.382	0.175
0.729	0.382	0.173
0.745	0.382	0.172
0.761	0.382	0.170
0.777	0.382	0.168
0.794	0.382	0.166
0.810	0.382	0.165
0.826	0.382	0.163
0.843	0.382	0.162
0.860	0.382	0.160
0.876	0.382	0.159
0.893	0.382	0.157
0.910	0.382	0.156
0.928	0.382	0.154
0.945	0.382	0.153
0.962	0.382	0.152
0.980	0.382	0.150
0.997	0.382	0.149
1.015	0.382	0.148
1.032	0.382	0.146
1.050	0.382	0.145
1.068	0.382	0.144
1.086	0.382	0.143
1.104	0.382	0.142
1.123	0.382	0.141
1.141	0.382	0.140
1.160	0.382	0.138
1.178	0.382	0.137
1.197	0.382	0.136
1.215	0.382	0.135
1.234	0.382	0.134
1.250	0.382	0.134

**Soil Moisture Profile below Slab on Grade Building  
Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

$z$ (m)	$\theta_T$	$\theta_w$
<b>Note:</b>		
Based on geotechnical data for sand from VHC-4001:		
$\theta_T$	0.382	
$\theta_r$	0.035	
$\alpha$	0.050	
$N$	1.675	

Calculation of Effective Diffusion Coefficients for a Slab on Grade Building Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan						
Chem Group	Chemical	CASRN	D <sub>air</sub> (cm <sup>2</sup> /s)	D <sub>water</sub> (cm <sup>2</sup> /s)	H (unitless)	D <sub>eff</sub> <sup>T</sup> (cm <sup>2</sup> /s)
VOC	Acetone	67-64-1	1.2E-01	1.1E-05	8.0E-04	3.6E-03
VOC	Benzene	71-43-2	8.8E-02	9.8E-06	1.1E-01	1.8E-04
VOC	Bromomethane	74-83-9	7.3E-02	1.2E-05	1.3E-01	1.8E-04
VOC	2-Butanone	78-93-3	9.5E-02	1.0E-05	1.1E-03	2.5E-03
VOC	Carbon Disulfide	75-15-0	1.0E-01	1.0E-05	6.2E-01	5.7E-05
VOC	Carbon Tetrachloride	56-23-5	7.8E-02	8.8E-06	6.3E-01	4.8E-05
VOC	Chlorobenzene	108-90-7	7.3E-02	8.7E-06	7.6E-02	2.1E-04
VOC	Chloroethane	75-00-3	1.1E-01	1.5E-06	1.8E-01	3.6E-05
VOC	Chloroform	67-66-3	1.0E-01	1.0E-05	7.5E-02	2.6E-04
VOC	Cumene	98-82-8	6.5E-02	7.8E-06	2.4E+01	2.5E-06
VOC	Cyclohexane	110-82-7	1.1E-01	9.1E-06	4.0E+00	1.3E-05
VOC	1,2-Dichlorobenzene	95-50-1	6.9E-02	7.9E-06	3.9E-02	3.0E-04
VOC	1,4-Dichlorobenzene	106-46-7	6.9E-02	7.9E-06	5.0E-02	2.5E-04
VOC	1,1-Dichloroethane	75-34-3	7.4E-02	1.1E-05	1.2E-01	1.8E-04
VOC	1,2-Dichloroethane	107-06-2	1.0E-01	9.9E-06	2.0E-02	6.0E-04
VOC	1,1-Dichloroethene	75-35-4	9.0E-02	1.0E-05	5.4E-01	6.3E-05
VOC	1,2-Dichloroethene (total)	540-59-0	7.1E-02	1.2E-05	1.9E-01	1.4E-04
VOC	cis-1,2-Dichloroethene	156-59-2	7.4E-02	1.1E-05	8.4E-02	2.3E-04
VOC	trans-1,2-Dichloroethene	156-60-5	7.1E-02	1.2E-05	1.9E-01	1.4E-04
VOC	Ethyl Benzene	100-41-4	7.5E-02	7.8E-06	1.6E-01	1.2E-04
VOC	Methyl Acetate	79-20-9	1.2E-01	1.1E-05	1.8E-03	2.5E-03
VOC	Methyl tert-butyl ether	1634-04-4	1.0E-01	1.1E-05	2.8E-02	5.1E-04
VOC	4-Methyl-2-pentanone	108-10-1	7.5E-02	8.4E-06	2.8E-03	1.3E-03
VOC	Methylcyclohexane	108-87-2	9.0E-02	8.5E-06	4.6E-01	6.1E-05
VOC	Methylene Chloride	75-09-2	1.0E-01	1.2E-05	4.5E-02	4.0E-04
VOC	Styrene	100-42-5	7.1E-02	8.0E-06	5.7E-02	2.4E-04
VOC	Tetrachloroethene	127-18-4	7.2E-02	8.2E-06	3.8E-01	6.5E-05
VOC	Toluene	108-88-3	8.7E-02	8.6E-06	1.4E-01	1.5E-04
VOC	1,2,4-Trichlorobenzene	120-82-1	3.0E-02	8.2E-06	2.9E-02	2.6E-04
VOC	1,1,1-Trichloroethane	71-55-6	7.8E-02	8.8E-06	3.5E-01	7.3E-05
VOC	1,1,2-Trichloroethane	79-00-5	7.8E-02	8.8E-06	1.9E-02	5.2E-04
VOC	Trichloroethene	79-01-6	7.9E-02	9.1E-06	2.1E-01	1.1E-04
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	7.8E-02	8.2E-06	9.8E+00	5.4E-06
VOC	1,2,4-Trimethylbenzene	95-63-6	6.5E-02	7.9E-06	1.2E-01	1.4E-04
VOC	Vinyl Chloride	75-01-4	1.1E-01	1.2E-05	5.6E-01	7.3E-05
VOC	Xylenes (total)	1330-20-7	7.8E-02	8.7E-06	1.4E-01	1.4E-04
SVOC	Acenaphthene	83-32-9	4.2E-02	7.7E-06	3.2E-03	8.9E-04
SVOC	Acenaphthylene	208-96-8			2.3E-03	
SVOC	Anthracene	120-12-7	3.2E-02	7.7E-06	1.3E-03	1.1E-03
SVOC	Benzo(a)anthracene	56-55-3	5.1E-02	9.0E-06	6.9E-05	6.0E-03
SVOC	Benzo(a)pyrene	50-32-8	4.3E-02	9.0E-06	2.3E-05	1.2E-02
SVOC	Benzo(b)fluoranthene	205-99-2	2.3E-02	5.6E-06	2.3E-03	6.3E-04
SVOC	Benzo(g,h,i)perylene	191-24-2	2.3E-02	5.2E-05	2.9E-06	3.9E-01
SVOC	Benzo(k)fluoranthene	207-08-9	2.3E-02	5.6E-06	1.7E-05	8.8E-03
SVOC	Biphenyl	92-52-4			6.1E-03	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	3.5E-02	3.7E-06	2.1E-06	4.0E-02
SVOC	Butylbenzylphthalate	85-68-7	1.7E-02	4.8E-06	2.6E-05	5.3E-03
SVOC	Caprolactam	105-60-2				
SVOC	Carbazole	86-74-8	3.9E-02	7.0E-06	3.1E-07	4.9E-01
SVOC	Chrysene	218-01-9	2.5E-02	6.2E-06	1.9E-03	7.5E-04

Calculation of Effective Diffusion Coefficients for a Slab on Grade Building Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan						
Chem Group	Chemical	CASRN	D <sub>air</sub> (cm <sup>2</sup> /s)	D <sub>water</sub> (cm <sup>2</sup> /s)	H (unitless)	D <sub>eff</sub> <sup>T</sup> (cm <sup>2</sup> /s)
SVOC	Dibenz(a,h)anthracene	53-70-3	2.0E-02	5.2E-06	3.0E-07	3.7E-01
SVOC	Dibenzofuran	132-64-9	2.7E-02	5.9E-06	2.6E-04	1.8E-03
SVOC	Diethylphthalate	84-66-2	2.6E-02	6.4E-06	9.3E-06	1.7E-02
SVOC	Di-n-butylphthalate	84-74-2	4.4E-02	7.9E-06	1.9E-08	8.8E+00
SVOC	Fluoranthene	206-44-0	3.0E-02	6.4E-06	3.3E-04	1.8E-03
SVOC	Fluorene	86-73-7	3.6E-02	7.9E-06	1.3E-03	1.2E-03
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.9E-02	5.7E-06	3.3E-05	5.1E-03
SVOC	2-Methylnaphthalene	91-57-6	4.8E-02	7.8E-06	1.1E-02	5.4E-04
SVOC	Methylphenol (total)	1319-77-3	7.4E-02	9.3E-06	1.8E-05	1.7E-02
SVOC	Naphthalene	91-20-3	5.9E-02	7.5E-06	9.9E-03	6.0E-04
SVOC	Pentachlorophenol	87-86-5	5.6E-02	6.1E-06	5.0E-07	2.7E-01
SVOC	Phenanthrene	85-01-8	3.3E-02	7.5E-06	4.8E-04	1.7E-03
SVOC	Phenol	108-95-2	8.2E-02	9.1E-06	8.2E-06	3.0E-02
SVOC	Pyrene	129-00-0	2.7E-02	7.2E-06	2.3E-04	2.1E-03
P/PCB	PCBs (total)	1336-36-3	8.0E-02	1.0E-05	5.3E-02	3.0E-04
INORG	Mercury	7439-97-6	3.1E-02	6.3E-06	1.5E-01	8.2E-05

Calculation of Site-Specific Vapor Intrusion Criteria for On-Site Groundwater Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan											
Chem Group	Chemical	CASRN	D <sub>air</sub> (cm <sup>2</sup> /s)	D <sub>water</sub> (cm <sup>2</sup> /s)	H (unitless)	D <sub>crack</sub> (cm <sup>2</sup> /s)	D <sub>eff</sub> <sup>T</sup> (cm <sup>2</sup> /s)	α <sub>∞</sub>	C <sub>bldg</sub> (L-water/m <sup>3</sup> )	Occupational Criteria (mg/m <sup>3</sup> )	Criteria (mg/L)
VOC	Acetone	67-64-1	1.2E-01	1.1E-05	8.0E-04	8.3E-03	3.6E-03	1.4E-05	1.1E-05	1.8E+03	1.6E+08
VOC	Benzene	71-43-2	8.8E-02	9.8E-06	1.1E-01	5.8E-03	1.8E-04	6.5E-06	7.4E-04	3.2E+00	4.3E+03
VOC	Bromomethane	74-83-9	7.3E-02	1.2E-05	1.3E-01	4.8E-03	1.8E-04	6.5E-06	8.3E-04	3.9E+00	4.7E+03
VOC	2-Butanone	78-93-3	9.5E-02	1.0E-05	1.1E-03	6.3E-03	2.5E-03	1.4E-05	1.6E-05	5.9E+02	3.7E+07
VOC	Carbon Disulfide	75-15-0	1.0E-01	1.0E-05	6.2E-01	6.9E-03	5.7E-05	2.8E-06	1.8E-03	1.2E+01	6.8E+03
VOC	Carbon Tetrachloride	56-23-5	7.8E-02	8.8E-06	6.3E-01	5.2E-03	4.8E-05	2.5E-06	1.5E-03	1.3E+01	8.2E+03
VOC	Chlorobenzene	108-90-7	7.3E-02	8.7E-06	7.6E-02	4.8E-03	2.1E-04	7.0E-06	5.3E-04	3.5E+02	6.6E+05
VOC	Chloroethane	75-00-3	1.1E-01	1.5E-06	1.8E-01	7.3E-03	3.6E-05	1.9E-06	3.4E-04	2.6E+03	7.6E+06
VOC	Chloroform	67-66-3	1.0E-01	1.0E-05	7.5E-02	6.9E-03	2.6E-04	7.8E-06	5.8E-04	9.8E+00	1.7E+04
VOC	Cumene	98-82-8	6.5E-02	7.8E-06	2.4E+01	4.3E-03	2.5E-06	1.5E-07	3.6E-03	2.5E+02	6.9E+04
VOC	Cyclohexane	110-82-7	1.1E-01	9.1E-06	4.0E+00	7.3E-03	1.3E-05	7.5E-07	3.0E-03	1.1E+03	3.5E+05
VOC	1,2-Dichlorobenzene	95-50-1	6.9E-02	7.9E-06	3.9E-02	4.6E-03	3.0E-04	8.3E-06	3.2E-04	1.5E+02	4.6E+05
VOC	1,4-Dichlorobenzene	106-46-7	6.9E-02	7.9E-06	5.0E-02	4.6E-03	2.5E-04	7.7E-06	3.8E-04	4.5E+02	1.2E+06
VOC	1,1-Dichloroethane	75-34-3	7.4E-02	1.1E-05	1.2E-01	4.9E-03	1.8E-04	6.4E-06	7.4E-04	4.0E+02	5.4E+05
VOC	1,2-Dichloroethane	107-06-2	1.0E-01	9.9E-06	2.0E-02	6.9E-03	6.0E-04	1.1E-05	2.2E-04	4.0E+00	1.8E+04
VOC	1,1-Dichloroethene	75-35-4	9.0E-02	1.0E-05	5.4E-01	5.9E-03	6.3E-05	3.1E-06	1.6E-03	2.0E+01	1.2E+04
VOC	1,2-Dichloroethene (total)	540-59-0	7.1E-02	1.2E-05	1.9E-01	4.7E-03	1.4E-04	5.4E-06	1.0E-03	7.9E+02	7.6E+05
VOC	cis-1,2-Dichloroethene	156-59-2	7.4E-02	1.1E-05	8.4E-02	4.9E-03	2.3E-04	7.4E-06	6.2E-04	7.9E+02	1.3E+06
VOC	trans-1,2-Dichloroethene	156-60-5	7.1E-02	1.2E-05	1.9E-01	4.7E-03	1.4E-04	5.4E-06	1.0E-03	7.9E+02	7.7E+05
VOC	Ethyl Benzene	100-41-4	7.5E-02	7.8E-06	1.6E-01	5.0E-03	1.2E-04	4.8E-06	7.8E-04	4.4E+02	5.6E+05
VOC	Methyl Acetate	79-20-9	1.2E-01	1.1E-05	1.8E-03	8.2E-03	2.5E-03	1.4E-05	2.5E-05	6.1E+02	2.5E+07
VOC	Methyl tert-butyl ether	1634-04-4	1.0E-01	1.1E-05	2.8E-02	6.8E-03	5.1E-04	1.0E-05	2.8E-04	1.8E+02	6.3E+05
VOC	4-Methyl-2-pentanone	108-10-1	7.5E-02	8.4E-06	2.8E-03	5.0E-03	1.3E-03	1.3E-05	3.7E-05	4.1E+02	1.1E+07
VOC	Methylcyclohexane	108-87-2	9.0E-02	8.5E-06	4.6E-01	5.9E-03	6.1E-05	3.0E-06	1.4E-03	2.0E+03	1.5E+06
VOC	Methylene Chloride	75-09-2	1.0E-01	1.2E-05	4.5E-02	6.7E-03	4.0E-04	9.4E-06	4.2E-04	8.7E+01	2.1E+05
VOC	Styrene	100-42-5	7.1E-02	8.0E-06	5.7E-02	4.7E-03	2.4E-04	7.5E-06	4.2E-04	2.2E+02	5.1E+05
VOC	Tetrachloroethene	127-18-4	7.2E-02	8.2E-06	3.8E-01	4.8E-03	6.5E-05	3.1E-06	1.2E-03	1.7E+02	1.4E+05
VOC	Toluene	108-88-3	8.7E-02	8.6E-06	1.4E-01	5.7E-03	1.5E-04	5.7E-06	7.7E-04	3.8E+02	4.9E+05
VOC	1,2,4-Trichlorobenzene	120-82-1	3.0E-02	8.2E-06	2.9E-02	2.0E-03	2.6E-04	7.8E-06	2.3E-04		
VOC	1,1,1-Trichloroethane	71-55-6	7.8E-02	8.8E-06	3.5E-01	5.2E-03	7.3E-05	3.5E-06	1.2E-03	1.9E+03	1.6E+06
VOC	1,1,2-Trichloroethane	79-00-5	7.8E-02	8.8E-06	1.9E-02	5.2E-03	5.2E-04	1.0E-05	1.9E-04	4.5E+01	2.3E+05
VOC	Trichloroethene	79-01-6	7.9E-02	9.1E-06	2.1E-01	5.2E-03	1.1E-04	4.6E-06	9.8E-04	2.7E+02	2.8E+05
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	7.8E-02	8.2E-06	9.8E+00	5.2E-03	5.4E-06	3.2E-07	3.2E-03	7.6E+03	2.4E+06
VOC	1,2,4-Trimethylbenzene	95-63-6	6.5E-02	7.9E-06	1.2E-01	4.3E-03	1.4E-04	5.5E-06	6.4E-04	1.3E+02	2.0E+05
VOC	Vinyl Chloride	75-01-4	1.1E-01	1.2E-05	5.6E-01	7.0E-03	7.3E-05	3.4E-06	1.9E-03	2.5E+00	1.3E+03
VOC	Xylenes (total)	1330-20-7	7.8E-02	8.7E-06	1.4E-01	5.1E-03	1.4E-04	5.5E-06	7.6E-04	4.4E+02	5.7E+05
SVOC	Acenaphthene	83-32-9	4.2E-02	7.7E-06	3.2E-03	2.8E-03	8.9E-04	1.2E-05	3.8E-05		
SVOC	Acenaphthylene	208-96-8			2.3E-03						

Calculation of Site-Specific Vapor Intrusion Criteria for On-Site Groundwater Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan											
Chem Group	Chemical	CASRN	D <sub>air</sub> (cm <sup>2</sup> /s)	D <sub>water</sub> (cm <sup>2</sup> /s)	H (unitless)	D <sub>crack</sub> (cm <sup>2</sup> /s)	D <sub>eff</sub> <sup>T</sup> (cm <sup>2</sup> /s)	α <sub>∞</sub>	C <sub>bldg</sub> (L-water/m <sup>3</sup> )	Occupational Criteria (mg/m <sup>3</sup> )	Criteria (mg/L)
SVOC	Anthracene	120-12-7	3.2E-02	7.7E-06	1.3E-03	2.2E-03	1.1E-03	1.3E-05	1.7E-05		
SVOC	Benzo(a)anthracene	56-55-3	5.1E-02	9.0E-06	6.9E-05	4.5E-03	6.0E-03	1.5E-05	1.0E-06		
SVOC	Benzo(a)pyrene	50-32-8	4.3E-02	9.0E-06	2.3E-05	6.1E-03	1.2E-02	1.5E-05	3.5E-07		
SVOC	Benzo(b)fluoranthene	205-99-2	2.3E-02	5.6E-06	2.3E-03	1.5E-03	6.3E-04	1.1E-05	2.5E-05		
SVOC	Benzo(g,h,i)perylene	191-24-2	2.3E-02	5.2E-05	2.9E-06	1.5E-01	3.9E-01	1.8E-05	5.1E-08		
SVOC	Benzo(k)fluoranthene	207-08-9	2.3E-02	5.6E-06	1.7E-05	4.2E-03	8.8E-03	1.5E-05	2.5E-07		
SVOC	Biphenyl	92-52-4			6.1E-03					1.0E+00	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	3.5E-02	3.7E-06	2.1E-06	1.7E-02	4.0E-02	1.5E-05	3.2E-08	5.0E+00	1.6E+08
SVOC	Butylbenzylphthalate	85-68-7	1.7E-02	4.8E-06	2.6E-05	2.7E-03	5.3E-03	1.5E-05	3.8E-07		
SVOC	Caprolactam	105-60-2								5.0E+00	
SVOC	Carbazole	86-74-8	3.9E-02	7.0E-06	3.1E-07	1.9E-01	4.9E-01	1.9E-05	6.1E-09		
SVOC	Chrysene	218-01-9	2.5E-02	6.2E-06	1.9E-03	1.7E-03	7.5E-04	1.2E-05	2.2E-05		
SVOC	Dibenz(a,h)anthracene	53-70-3	2.0E-02	5.2E-06	3.0E-07	1.4E-01	3.7E-01	1.8E-05	5.3E-09		
SVOC	Dibenzofuran	132-64-9	2.7E-02	5.9E-06	2.6E-04	2.0E-03	1.8E-03	1.4E-05	3.5E-06		
SVOC	Diethylphthalate	84-66-2	2.6E-02	6.4E-06	9.3E-06	7.4E-03	1.7E-02	1.5E-05	1.4E-07	5.0E+00	3.6E+07
SVOC	Di-n-butylphthalate	84-74-2	4.4E-02	7.9E-06	1.9E-08	3.4E+00	8.8E+00	1.8E-04	3.5E-09	5.0E+00	1.4E+09
SVOC	Fluoranthene	206-44-0	3.0E-02	6.4E-06	3.3E-04	2.2E-03	1.8E-03	1.3E-05	4.5E-06		
SVOC	Fluorene	86-73-7	3.6E-02	7.9E-06	1.3E-03	2.4E-03	1.2E-03	1.3E-05	1.7E-05		
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.9E-02	5.7E-06	3.3E-05	2.7E-03	5.1E-03	1.5E-05	4.8E-07		
SVOC	2-Methylnaphthalene	91-57-6	4.8E-02	7.8E-06	1.1E-02	3.2E-03	5.4E-04	1.0E-05	1.1E-04		
SVOC	Methylphenol (total)	1319-77-3	7.4E-02	9.3E-06	1.8E-05	9.3E-03	1.7E-02	1.5E-05	2.7E-07	2.2E+01	8.2E+07
SVOC	Naphthalene	91-20-3	5.9E-02	7.5E-06	9.9E-03	3.9E-03	6.0E-04	1.1E-05	1.1E-04	5.0E+01	4.7E+05
SVOC	Pentachlorophenol	87-86-5	5.6E-02	6.1E-06	5.0E-07	1.1E-01	2.7E-01	1.6E-05	8.2E-09	5.0E-01	6.1E+07
SVOC	Phenanthrene	85-01-8	3.3E-02	7.5E-06	4.8E-04	2.3E-03	1.7E-03	1.3E-05	6.4E-06		
SVOC	Phenol	108-95-2	8.2E-02	9.1E-06	8.2E-06	1.5E-02	3.0E-02	1.5E-05	1.2E-07	1.9E+01	1.5E+08
SVOC	Pyrene	129-00-0	2.7E-02	7.2E-06	2.3E-04	2.1E-03	2.1E-03	1.4E-05	3.1E-06		
P/PCB	PCBs (total)	1336-36-3	8.0E-02	1.0E-05	5.3E-02	5.3E-03	3.0E-04	8.3E-06	4.4E-04	5.0E-01	1.1E+03
INORG	Mercury	7439-97-6	3.1E-02	6.3E-06	1.5E-01	2.0E-03	8.2E-05	3.8E-06	5.5E-04	2.5E-02	4.6E+01

Calculation of Site-Specific Vapor Intrusion Criteria for On-Site Groundwater Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan											
Chem Group	Chemical	CASRN	D <sub>air</sub> (cm <sup>2</sup> /s)	D <sub>water</sub> (cm <sup>2</sup> /s)	H (unitless)	D <sub>crack</sub> (cm <sup>2</sup> /s)	D <sub>eff</sub> <sup>T</sup> (cm <sup>2</sup> /s)	α <sub>∞</sub>	C <sub>bldg</sub> (L-water/m <sup>3</sup> )	Occupational Criteria (mg/m <sup>3</sup> )	Criteria (mg/L)
<b>Notes:</b>	<b>Crack Soil and Building Characteristics</b>										
Bulk density	kg/L	ρ <sub>b</sub>	1.65								
Total porosity	L/L-soil	θ <sub>T</sub>	0.382								
Water-filled porosity	L/L-soil	θ <sub>w</sub>	0.134								
Air-filled porosity	L/L-soil	θ <sub>a</sub>	0.248								
Residual saturation	L/L-soil	θ <sub>r</sub>	0.035								
Hydraulic conductivity	cm/s	K	1.7E-03								
Dynamic viscosity of water	g/cm-s	μ <sub>w</sub>	0.01307								
Density of water	g/cm <sup>3</sup>	ρ <sub>w</sub>	1.0								
Gravitational acceleration	cm/s <sup>2</sup>	g	980.7								
Intrinsic permeability	cm <sup>2</sup>	k	2.3E-08								
Relative saturation	unitless	S <sub>e</sub>	0.285								
van Genuchten N	unitless	N	1.675								
van Genuchten M	unitless	M	0.403								
Relative air permeability	unitless	k <sub>rg</sub>	0.816								
Permeability to vapor	cm <sup>2</sup>	k <sub>v</sub>	1.85E-08								
Distance from building foundation to source	m	L <sub>T</sub>	1.25								
Bldg foundation thickness	m	L <sub>crack</sub>	0.15								
Bldg foundation length	m		19.29								
Bldg foundation width	m		19.29								
Bldg occupied height	m		2.44								
Bldg occupied volume	m <sup>3</sup>		907.93								
Bldg depth below ground	m		0.15								
Bldg area for vapor intrusion	m <sup>2</sup>	A <sub>B</sub>	383.7								
Ratio of A <sub>crack</sub> to A <sub>B</sub>		η	1E-04								
Area of cracks	m <sup>2</sup>	A <sub>crack</sub>	3.86E-02								
Air exchange rate	hour <sup>-1</sup>	ach	2.0								

Calculation of Site-Specific Vapor Intrusion Criteria for On-Site Groundwater Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan											
Chem Group	Chemical	CASRN	D <sub>air</sub> (cm <sup>2</sup> /s)	D <sub>water</sub> (cm <sup>2</sup> /s)	H (unitless)	D <sub>crack</sub> (cm <sup>2</sup> /s)	D <sub>eff</sub> <sup>T</sup> (cm <sup>2</sup> /s)	α <sub>∞</sub>	C <sub>bldg</sub> (L-water/m <sup>3</sup> )	Occupational Criteria (mg/m <sup>3</sup> )	Criteria (mg/L)
<b>Notes:</b>	<b>Crack Soil and Building Characteristics (Continued)</b>										
Building ventilation rate		m <sup>3</sup> /s	Q <sub>bldg</sub>	5.04E-01							
Pressure difference between outdoors-indoors		kg/m·s <sup>2</sup>	ΔP	1.0							
Viscosity of air		kg/m·s	μ <sub>a</sub>	1.8E-05							
Crack length (bldg perimeter)		m	X <sub>crack</sub>	77.16							
Crack depth below ground		m	Z <sub>crack</sub>	0.15							
Crack radius		m	r <sub>crack</sub>	5E-04							
Soil gas flow rate into bldg		m <sup>3</sup> /s	Q <sub>soil</sub>	7.78E-06							

Calculation of Site-Specific Vapor Intrusion Criteria for On-Site Soil Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan														
Chem Group	Chemical	CASRN	D <sub>air</sub> (cm <sup>2</sup> /s)	D <sub>water</sub> (cm <sup>2</sup> /s)	H (unitless)	D <sub>crack</sub> (cm <sup>2</sup> /s)	D <sub>eff</sub> <sup>T</sup> (cm <sup>2</sup> /s)	α <sub>∞</sub>	K <sub>oc</sub> (L/kg)	K <sub>d</sub> (L/kg)	C <sub>s, vap</sub> (kg-soil/m <sup>3</sup> )	C <sub>bldg</sub> (kg-soil/m <sup>3</sup> )	Occupational Criteria (mg/m <sup>3</sup> )	Criteria (mg/kg)
VOC	Acetone	67-64-1	1.2E-01	1.1E-05	8.0E-04	8.3E-03	8.3E-03	1.5E-05	5.8E-01	1.2E-03	9.7E+00	1.4E-04	1.8E+03	1.2E+07
VOC	Benzene	71-43-2	8.8E-02	9.8E-06	1.1E-01	5.8E-03	5.8E-03	1.5E-05	5.9E+01	1.2E-01	5.3E+02	7.8E-03	3.2E+00	4.1E+02
VOC	Bromomethane	74-83-9	7.3E-02	1.2E-05	1.3E-01	4.8E-03	4.8E-03	1.5E-05	1.1E+01	2.1E-02	1.1E+03	1.5E-02	3.9E+00	2.5E+02
VOC	2-Butanone	78-93-3	9.5E-02	1.0E-05	1.1E-03	6.3E-03	6.3E-03	1.5E-05	2.3E+00	4.7E-03	1.3E+01	2.0E-04	5.9E+02	3.0E+06
VOC	Carbon Disulfide	75-15-0	1.0E-01	1.0E-05	6.2E-01	6.9E-03	6.9E-03	1.5E-05	4.6E+01	9.1E-02	2.3E+03	3.5E-02	1.2E+01	3.5E+02
VOC	Carbon Tetrachloride	56-23-5	7.8E-02	8.8E-06	6.3E-01	5.2E-03	5.2E-03	1.5E-05	1.7E+02	3.5E-01	1.2E+03	1.8E-02	1.3E+01	7.2E+02
VOC	Chlorobenzene	108-90-7	7.3E-02	8.7E-06	7.6E-02	4.8E-03	4.8E-03	1.5E-05	2.2E+02	4.4E-01	1.4E+02	2.1E-03	3.5E+02	1.7E+05
VOC	Chloroethane	75-00-3	1.1E-01	1.5E-06	1.8E-01	7.3E-03	7.3E-03	1.5E-05	1.5E+01	3.0E-02	1.3E+03	1.9E-02	2.6E+03	1.3E+05
VOC	Chloroform	67-66-3	1.0E-01	1.0E-05	7.5E-02	6.9E-03	6.9E-03	1.5E-05	4.0E+01	8.0E-02	4.4E+02	6.5E-03	9.8E+00	1.5E+03
VOC	Cumene	98-82-8	6.5E-02	7.8E-06	2.4E+01	4.3E-03	4.3E-03	1.5E-05	3.3E+03	6.6E+00	2.3E+03	3.4E-02	2.5E+02	7.3E+03
VOC	Cyclohexane	110-82-7	1.1E-01	9.1E-06	4.0E+00	7.3E-03	7.3E-03	1.5E-05					1.1E+03	
VOC	1,2-Dichlorobenzene	95-50-1	6.9E-02	7.9E-06	3.9E-02	4.6E-03	4.6E-03	1.5E-05	6.2E+02	1.2E+00	2.9E+01	4.3E-04	1.5E+02	3.5E+05
VOC	1,4-Dichlorobenzene	106-46-7	6.9E-02	7.9E-06	5.0E-02	4.6E-03	4.6E-03	1.5E-05	6.2E+02	1.2E+00	3.8E+01	5.5E-04	4.5E+02	8.2E+05
VOC	1,1-Dichloroethane	75-34-3	7.4E-02	1.1E-05	1.2E-01	4.9E-03	4.9E-03	1.5E-05	3.2E+01	6.3E-02	7.1E+02	1.0E-02	4.0E+02	3.8E+04
VOC	1,2-Dichloroethane	107-06-2	1.0E-01	9.9E-06	2.0E-02	6.9E-03	6.9E-03	1.5E-05	1.7E+01	3.5E-02	1.7E+02	2.5E-03	4.0E+00	1.6E+03
VOC	1,1-Dichloroethene	75-35-4	9.0E-02	1.0E-05	5.4E-01	5.9E-03	5.9E-03	1.5E-05	5.9E+01	1.2E-01	1.9E+03	2.8E-02	2.0E+01	7.0E+02
VOC	1,2-Dichloroethene (total)	540-59-0	7.1E-02	1.2E-05	1.9E-01	4.7E-03	4.7E-03	1.5E-05	5.3E+01	1.1E-01	9.0E+02	1.3E-02	7.9E+02	6.0E+04
VOC	cis-1,2-Dichloroethene	156-59-2	7.4E-02	1.1E-05	8.4E-02	4.9E-03	4.9E-03	1.5E-05	3.6E+01	7.1E-02	5.1E+02	7.4E-03	7.9E+02	1.1E+05
VOC	trans-1,2-Dichloroethene	156-60-5	7.1E-02	1.2E-05	1.9E-01	4.7E-03	4.7E-03	1.5E-05	5.3E+01	1.1E-01	9.0E+02	1.3E-02	7.9E+02	6.1E+04
VOC	Ethyl Benzene	100-41-4	7.5E-02	7.8E-06	1.6E-01	5.0E-03	5.0E-03	1.5E-05	3.6E+02	7.3E-01	1.9E+02	2.9E-03	4.4E+02	1.5E+05
VOC	Methyl Acetate	79-20-9	1.2E-01	1.1E-05	1.8E-03	8.2E-03	8.2E-03	1.5E-05	3.3E+00	6.5E-03	2.0E+01	3.0E-04	6.1E+02	2.0E+06
VOC	Methyl tert-butyl ether	1634-04-4	1.0E-01	1.1E-05	2.8E-02	6.8E-03	6.8E-03	1.5E-05					1.8E+02	
VOC	4-Methyl-2-pentanone	108-10-1	7.5E-02	8.4E-06	2.8E-03	5.0E-03	5.0E-03	1.5E-05	1.2E+01	2.4E-02	2.7E+01	3.9E-04	4.1E+02	1.0E+06
VOC	Methylcyclohexane	108-87-2	9.0E-02	8.5E-06	4.6E-01	5.9E-03	5.9E-03	1.5E-05					2.0E+03	
VOC	Methylene Chloride	75-09-2	1.0E-01	1.2E-05	4.5E-02	6.7E-03	6.7E-03	1.5E-05	1.2E+01	2.3E-02	4.0E+02	6.0E-03	8.7E+01	1.4E+04
VOC	Styrene	100-42-5	7.1E-02	8.0E-06	5.7E-02	4.7E-03	4.7E-03	1.5E-05	7.8E+02	1.6E+00	3.4E+01	5.0E-04	2.2E+02	4.3E+05
VOC	Tetrachloroethene	127-18-4	7.2E-02	8.2E-06	3.8E-01	4.8E-03	4.8E-03	1.5E-05	1.6E+02	3.1E-01	8.4E+02	1.2E-02	1.7E+02	1.4E+04
VOC	Toluene	108-88-3	8.7E-02	8.6E-06	1.4E-01	5.7E-03	5.7E-03	1.5E-05	1.8E+02	3.6E-01	2.9E+02	4.3E-03	3.8E+02	8.7E+04
VOC	1,2,4-Trichlorobenzene	120-82-1	3.0E-02	8.2E-06	2.9E-02	2.0E-03	2.0E-03	1.4E-05	1.8E+03	3.6E+00	8.0E+00	1.1E-04		
VOC	1,1,1-Trichloroethane	71-55-6	7.8E-02	8.8E-06	3.5E-01	5.2E-03	5.2E-03	1.5E-05	1.1E+02	2.2E-01	1.0E+03	1.5E-02	1.9E+03	1.3E+05
VOC	1,1,2-Trichloroethane	79-00-5	7.8E-02	8.8E-06	1.9E-02	5.2E-03	5.2E-03	1.5E-05	5.0E+01	1.0E-01	1.0E+02	1.5E-03	4.5E+01	3.0E+04
VOC	Trichloroethene	79-01-6	7.9E-02	9.1E-06	2.1E-01	5.2E-03	5.2E-03	1.5E-05	1.7E+02	3.3E-01	4.7E+02	7.0E-03	2.7E+02	3.9E+04
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	7.8E-02	8.2E-06	9.8E+00	5.2E-03	5.2E-03	1.5E-05	1.3E+03	2.6E+00	2.4E+03	3.5E-02	7.6E+03	2.2E+05
VOC	1,2,4-Trimethylbenzene	95-63-6	6.5E-02	7.9E-06	1.2E-01	4.3E-03	4.3E-03	1.5E-05					1.3E+02	
VOC	Vinyl Chloride	75-01-4	1.1E-01	1.2E-05	5.6E-01	7.0E-03	7.0E-03	1.5E-05	1.9E+01	3.7E-02	2.8E+03	4.1E-02	2.5E+00	6.1E+01
VOC	Xylenes (total)	1330-20-7	7.8E-02	8.7E-06	1.4E-01	5.1E-03	5.1E-03	1.5E-05	3.9E+02	7.7E-01	1.6E+02	2.3E-03	4.4E+02	1.9E+05
SVOC	Acenaphthene	83-32-9	4.2E-02	7.7E-06	3.2E-03	2.8E-03	2.8E-03	1.4E-05	7.1E+03	1.4E+01	2.2E-01	3.2E-06		
SVOC	Acenaphthylene	208-96-8			2.3E-03					4.9E+03	9.8E+00	2.3E-01		
SVOC	Anthracene	120-12-7	3.2E-02	7.7E-06	1.3E-03	2.2E-03	2.2E-03	1.4E-05	3.0E+04	5.9E+01	2.3E-02	3.1E-07		
SVOC	Benzo(a)anthracene	56-55-3	5.1E-02	9.0E-06	6.9E-05	4.5E-03	4.5E-03	1.5E-05	4.0E+05	8.0E+02	8.6E-05	1.3E-09		
SVOC	Benzo(a)pyrene	50-32-8	4.3E-02	9.0E-06	2.3E-05	6.1E-03	6.1E-03	1.5E-05	1.0E+06	2.0E+03	1.1E-05	1.7E-10		
SVOC	Benzo(b)fluoranthene	205-99-2	2.3E-02	5.6E-06	2.3E-03	1.5E-03	1.5E-03	1.3E-05	1.2E+06	2.5E+03	9.2E-04	1.2E-08		
SVOC	Benzo(g,h,i)perylene	191-24-2	2.3E-02	5.2E-05	2.9E-06	1.5E-01	1.5E-01	1.8E-05	1.6E+06	3.2E+03	9.0E-07	1.6E-11		
SVOC	Benzo(k)fluoranthene	207-08-9	2.3E-02	5.6E-06	1.7E-05	4.2E-03	4.2E-03	1.5E-05	1.2E+06	2.5E+03	6.9E-06	1.0E-10		
SVOC	Biphenyl	92-52-4			6.1E-03								1.0E+00	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	3.5E-02	3.7E-06	2.1E-06	1.7E-02	1.7E-02	1.5E-05	1.5E+07	3.0E+04	6.9E-08	1.1E-12	5.0E+00	4.8E+12
SVOC	Butylbenzylphthalate	85-68-7	1.7E-02	4.8E-06	2.6E-05	2.7E-03	2.7E-03	1.4E-05	5.8E+04	1.2E+02	2.2E-04	3.2E-09		
SVOC	Caprolactam	105-60-2											5.0E+00	

Calculation of Site-Specific Vapor Intrusion Criteria for On-Site Soil Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan														
Chem Group	Chemical	CASRN	D <sub>air</sub> (cm <sup>2</sup> /s)	D <sub>water</sub> (cm <sup>2</sup> /s)	H (unitless)	D <sub>crack</sub> (cm <sup>2</sup> /s)	D <sub>eff</sub> <sup>T</sup> (cm <sup>2</sup> /s)	α <sub>∞</sub>	K <sub>oc</sub> (L/kg)	K <sub>d</sub> (L/kg)	C <sub>s, vap</sub> (kg-soil/m <sup>3</sup> )	C <sub>bldg</sub> (kg-soil/m <sup>3</sup> )	Occupational Criteria (mg/m <sup>3</sup> )	Criteria (mg/kg)
SVOC	Carbazole	86-74-8	3.9E-02	7.0E-06	3.1E-07	1.9E-01	1.9E-01	1.9E-05	3.4E+03	6.8E+00	4.6E-05	8.8E-10		
SVOC	Chrysene	218-01-9	2.5E-02	6.2E-06	1.9E-03	1.7E-03	1.7E-03	1.3E-05	4.0E+05	8.0E+02	2.4E-03	3.3E-08		
SVOC	Dibenz(a,h)anthracene	53-70-3	2.0E-02	5.2E-06	3.0E-07	1.4E-01	1.4E-01	1.8E-05	3.8E+06	7.6E+03	4.0E-08	7.0E-13		
SVOC	Dibenzofuran	132-64-9	2.7E-02	5.9E-06	2.6E-04	2.0E-03	2.0E-03	1.4E-05						
SVOC	Diethylphthalate	84-66-2	2.6E-02	6.4E-06	9.3E-06	7.4E-03	7.4E-03	1.5E-05	2.9E+02	5.8E-01	1.4E-02	2.1E-07	5.0E+00	2.4E+07
SVOC	Di-n-butylphthalate	84-74-2	4.4E-02	7.9E-06	1.9E-08	3.4E+00	3.4E+00	1.8E-04	3.4E+04	6.8E+01	2.8E-07	5.2E-11	5.0E+00	9.7E+10
SVOC	Fluoranthene	206-44-0	3.0E-02	6.4E-06	3.3E-04	2.2E-03	2.2E-03	1.4E-05	1.1E+05	2.1E+02	1.5E-03	2.1E-08		
SVOC	Fluorene	86-73-7	3.6E-02	7.9E-06	1.3E-03	2.4E-03	2.4E-03	1.4E-05	1.4E+04	2.8E+01	4.7E-02	6.6E-07		
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.9E-02	5.7E-06	3.3E-05	2.7E-03	2.7E-03	1.4E-05	3.5E+06	6.9E+03	4.7E-06	6.7E-11		
SVOC	2-Methylnaphthalene	91-57-6	4.8E-02	7.8E-06	1.1E-02	3.2E-03	3.2E-03	1.4E-05						
SVOC	Methylphenol (total)	1319-77-3	7.4E-02	9.3E-06	1.8E-05	9.3E-03	9.3E-03	1.5E-05	8.6E+01	1.7E-01	7.0E-02	1.0E-06	2.2E+01	2.1E+07
SVOC	Naphthalene	91-20-3	5.9E-02	7.5E-06	9.9E-03	3.9E-03	3.9E-03	1.4E-05	2.0E+03	4.0E+00	2.4E+00	3.5E-05	5.0E+01	1.4E+06
SVOC	Pentachlorophenol	87-86-5	5.6E-02	6.1E-06	5.0E-07	1.1E-01	1.1E-01	1.6E-05	5.9E+02	1.2E+00	4.0E-04	6.4E-09	5.0E-01	7.8E+07
SVOC	Phenanthrene	85-01-8	3.3E-02	7.5E-06	4.8E-04	2.3E-03	2.3E-03	1.4E-05	1.4E+04	2.8E+01	1.7E-02	2.4E-07		
SVOC	Phenol	108-95-2	8.2E-02	9.1E-06	8.2E-06	1.5E-02	1.5E-02	1.5E-05	2.9E+01	5.8E-02	5.9E-02	8.9E-07	1.9E+01	2.1E+07
SVOC	Pyrene	129-00-0	2.7E-02	7.2E-06	2.3E-04	2.1E-03	2.1E-03	1.4E-05	1.1E+05	2.1E+02	1.1E-03	1.5E-08		
P/PCB	PCBs (total)	1336-36-3	8.0E-02	1.0E-05	5.3E-02	5.3E-03	5.3E-03	1.5E-05	3.1E+05	6.2E+02	8.6E-02	1.3E-06	5.0E-01	4.0E+05
INORG	Mercury	7439-97-6	3.1E-02	6.3E-06	1.5E-01	2.0E-03	2.0E-03	1.4E-05		1.0E+03	1.5E-01	2.0E-06	2.5E-02	1.3E+04
<b>Notes: Soil and Building Characteristics</b>														
Bulk density		kg/L	ρ <sub>b</sub>	<b>1.65</b>	<b>1.65</b>									
Total porosity		L/L-soil	θ <sub>T</sub>	<b>0.382</b>	<b>0.382</b>									
Water-filled porosity		L/L-soil	θ <sub>w</sub>	<b>0.134</b>	<b>0.134</b>									
Air-filled porosity		L/L-soil	θ <sub>a</sub>	0.248	0.248									
Organic carbon fraction	unitless	f <sub>oc</sub>		<b>0.002</b>										
Residual saturation		L/L-soil	θ <sub>r</sub>	<b>0.035</b>										
Hydraulic conductivity		cm/s	K	<b>1.7E-03</b>										
Dynamic viscosity of water		g/cm·s	μ <sub>w</sub>	0.01307										
Density of water		g/cm <sup>3</sup>	ρ <sub>w</sub>	1.0										
Gravitational acceleration		cm/s <sup>2</sup>	g	980.7										
Intrinsic permeability		cm <sup>2</sup>	k	2.3E-08										
Relative saturation	unitless	S <sub>e</sub>		0.285										
van Genuchten N	unitless	N		<b>1.675</b>										
van Genuchten M	unitless	M		0.403										
Relative air permeability	unitless	k <sub>rg</sub>		0.816										
Permeability to vapor		cm <sup>2</sup>	k <sub>v</sub>	1.8E-08										

Calculation of Site-Specific Vapor Intrusion Criteria for On-Site Soil Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan														
Chem Group	Chemical	CASRN	D <sub>air</sub> (cm <sup>2</sup> /s)	D <sub>water</sub> (cm <sup>2</sup> /s)	H (unitless)	D <sub>crack</sub> (cm <sup>2</sup> /s)	D <sub>eff</sub> <sup>T</sup> (cm <sup>2</sup> /s)	α <sub>∞</sub>	K <sub>oc</sub> (L/kg)	K <sub>d</sub> (L/kg)	C <sub>s, vap</sub> (kg-soil/m <sup>3</sup> )	C <sub>bldg</sub> (kg-soil/m <sup>3</sup> )	Occupational Criteria (mg/m <sup>3</sup> )	Criteria (mg/kg)
<b>Notes: Soil and Building Characteristics (Continued)</b>														
Distance from building foundation to source	m	L <sub>T</sub>	<b>1.25</b>											
Bldg foundation thickness	m	L <sub>crack</sub>	0.15											
Bldg foundation length	m		<b>19.29</b>											
Bldg foundation width	m		<b>19.29</b>											
Bldg occupied height	m		<b>2.44</b>											
Bldg occupied volume	m <sup>3</sup>		907.93											
Bldg depth below ground	m		<b>0.15</b>											
Bldg area for vapor intrusion	m <sup>2</sup>	A <sub>B</sub>	383.7											
Ratio of A <sub>crack</sub> to A <sub>B</sub>		η	1E-04											
Area of cracks	m <sup>2</sup>	A <sub>crack</sub>	3.86E-02											
Air exchange rate	hour <sup>-1</sup>	ach	<b>2.0</b>											
Building ventilation rate	m <sup>3</sup> /s	Q <sub>bldg</sub>	5.04E-01											
Pressure difference between outdoors-indoors	kg/m·s <sup>2</sup>	ΔP	1.0											
Viscosity of air	kg/m·s	μ <sub>a</sub>	1.8E-05											
Crack length (bldg perimeter)	m	X <sub>crack</sub>	77.16											
Crack depth below ground	m	Z <sub>crack</sub>	0.15											
Crack radius	m	r <sub>crack</sub>	<b>5E-04</b>											
Soil gas flow rate into bldg	m <sup>3</sup> /s	Q <sub>soil</sub>	7.78E-06											

**Soil Moisture Profile below Building with Basement**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

<b>z (m)</b>	<b><math>\theta_T</math></b>	<b><math>\theta_w</math></b>
0.000	0.382	0.382
0.004	0.382	0.382
0.009	0.382	0.381
0.013	0.382	0.381
0.018	0.382	0.380
0.022	0.382	0.379
0.027	0.382	0.377
0.031	0.382	0.376
0.036	0.382	0.375
0.040	0.382	0.373
0.044	0.382	0.371
0.049	0.382	0.370
0.053	0.382	0.368
0.058	0.382	0.366
0.062	0.382	0.364
0.067	0.382	0.362
0.071	0.382	0.360
0.076	0.382	0.358
0.080	0.382	0.356
0.084	0.382	0.354
0.089	0.382	0.351
0.093	0.382	0.349
0.098	0.382	0.347
0.102	0.382	0.345
0.107	0.382	0.342
0.111	0.382	0.340
0.116	0.382	0.338
0.120	0.382	0.336
0.124	0.382	0.333
0.129	0.382	0.331
0.133	0.382	0.329
0.138	0.382	0.327
0.142	0.382	0.325
0.147	0.382	0.322
0.151	0.382	0.320
0.156	0.382	0.318
0.160	0.382	0.316
0.164	0.382	0.314
0.169	0.382	0.312
0.173	0.382	0.309
0.178	0.382	0.307
0.182	0.382	0.305
0.187	0.382	0.303
0.191	0.382	0.301
0.196	0.382	0.299
0.200	0.382	0.297
0.204	0.382	0.295
0.209	0.382	0.293
0.213	0.382	0.291
0.218	0.382	0.289
0.222	0.382	0.288

**Soil Moisture Profile below Building with Basement  
Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

<b>z (m)</b>	<b><math>\theta_T</math></b>	<b><math>\theta_w</math></b>
0.227	0.382	0.286
0.231	0.382	0.284
0.236	0.382	0.282
0.240	0.382	0.280
0.244	0.382	0.279
0.249	0.382	0.277
0.253	0.382	0.275
0.258	0.382	0.273
0.262	0.382	0.272
0.267	0.382	0.270
0.271	0.382	0.268
0.276	0.382	0.267
0.280	0.382	0.265
0.284	0.382	0.264
0.289	0.382	0.262
0.293	0.382	0.261
0.298	0.382	0.259
0.302	0.382	0.258
0.307	0.382	0.256
0.311	0.382	0.255
0.316	0.382	0.253
0.320	0.382	0.252
0.324	0.382	0.251
0.329	0.382	0.249
0.333	0.382	0.248
0.338	0.382	0.246
0.342	0.382	0.245
0.347	0.382	0.244
0.351	0.382	0.243
0.356	0.382	0.241
0.360	0.382	0.240
0.364	0.382	0.239
0.369	0.382	0.238
0.373	0.382	0.236
0.378	0.382	0.235
0.382	0.382	0.234
0.387	0.382	0.233
0.391	0.382	0.232
0.396	0.382	0.231
0.400	0.382	0.229
0.404	0.382	0.228
0.409	0.382	0.227
0.413	0.382	0.226
0.418	0.382	0.225
0.422	0.382	0.224
0.427	0.382	0.223
0.431	0.382	0.222
0.436	0.382	0.221
0.440	0.382	0.220

**Soil Moisture Profile below Building with Basement  
Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

$z$ (m)	$\theta_T$	$\theta_w$
<b>Note:</b>		
Based on geotechnical data for sand from VHC-4001:		
$\theta_T$	0.382	
$\theta_r$	0.035	
$\alpha$	0.050	
$N$	1.675	

Calculation of Effective Diffusion Coefficients for a Building with Basement Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan						
Chem Group	Chemical	CASRN	D <sub>air</sub> (cm <sup>2</sup> /s)	D <sub>water</sub> (cm <sup>2</sup> /s)	H (unitless)	D <sub>eff</sub> <sup>T</sup> (cm <sup>2</sup> /s)
VOC	Acetone	67-64-1	1.2E-01	1.1E-05	8.0E-04	2.3E-03
VOC	Benzene	71-43-2	8.8E-02	9.8E-06	1.1E-01	6.6E-05
VOC	Bromomethane	74-83-9	7.3E-02	1.2E-05	1.3E-01	6.7E-05
VOC	2-Butanone	78-93-3	9.5E-02	1.0E-05	1.1E-03	1.5E-03
VOC	Carbon Disulfide	75-15-0	1.0E-01	1.0E-05	6.2E-01	2.0E-05
VOC	Carbon Tetrachloride	56-23-5	7.8E-02	8.8E-06	6.3E-01	1.7E-05
VOC	Chlorobenzene	108-90-7	7.3E-02	8.7E-06	7.6E-02	7.7E-05
VOC	Chloroethane	75-00-3	1.1E-01	1.5E-06	1.8E-01	1.3E-05
VOC	Chloroform	67-66-3	1.0E-01	1.0E-05	7.5E-02	9.5E-05
VOC	Cumene	98-82-8	6.5E-02	7.8E-06	2.4E+01	8.8E-07
VOC	Cyclohexane	110-82-7	1.1E-01	9.1E-06	4.0E+00	4.5E-06
VOC	1,2-Dichlorobenzene	95-50-1	6.9E-02	7.9E-06	3.9E-02	1.1E-04
VOC	1,4-Dichlorobenzene	106-46-7	6.9E-02	7.9E-06	5.0E-02	9.5E-05
VOC	1,1-Dichloroethane	75-34-3	7.4E-02	1.1E-05	1.2E-01	6.6E-05
VOC	1,2-Dichloroethane	107-06-2	1.0E-01	9.9E-06	2.0E-02	2.3E-04
VOC	1,1-Dichloroethene	75-35-4	9.0E-02	1.0E-05	5.4E-01	2.2E-05
VOC	1,2-Dichloroethene (total)	540-59-0	7.1E-02	1.2E-05	1.9E-01	4.9E-05
VOC	cis-1,2-Dichloroethene	156-59-2	7.4E-02	1.1E-05	8.4E-02	8.7E-05
VOC	trans-1,2-Dichloroethene	156-60-5	7.1E-02	1.2E-05	1.9E-01	4.9E-05
VOC	Ethyl Benzene	100-41-4	7.5E-02	7.8E-06	1.6E-01	4.2E-05
VOC	Methyl Acetate	79-20-9	1.2E-01	1.1E-05	1.8E-03	1.3E-03
VOC	Methyl tert-butyl ether	1634-04-4	1.0E-01	1.1E-05	2.8E-02	2.0E-04
VOC	4-Methyl-2-pentanone	108-10-1	7.5E-02	8.4E-06	2.8E-03	6.7E-04
VOC	Methylcyclohexane	108-87-2	9.0E-02	8.5E-06	4.6E-01	2.2E-05
VOC	Methylene Chloride	75-09-2	1.0E-01	1.2E-05	4.5E-02	1.5E-04
VOC	Styrene	100-42-5	7.1E-02	8.0E-06	5.7E-02	8.9E-05
VOC	Tetrachloroethene	127-18-4	7.2E-02	8.2E-06	3.8E-01	2.3E-05
VOC	Toluene	108-88-3	8.7E-02	8.6E-06	1.4E-01	5.3E-05
VOC	1,2,4-Trichlorobenzene	120-82-1	3.0E-02	8.2E-06	2.9E-02	1.1E-04
VOC	1,1,1-Trichloroethane	71-55-6	7.8E-02	8.8E-06	3.5E-01	2.6E-05
VOC	1,1,2-Trichloroethane	79-00-5	7.8E-02	8.8E-06	1.9E-02	2.1E-04
VOC	Trichloroethene	79-01-6	7.9E-02	9.1E-06	2.1E-01	3.9E-05
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	7.8E-02	8.2E-06	9.8E+00	1.9E-06
VOC	1,2,4-Trimethylbenzene	95-63-6	6.5E-02	7.9E-06	1.2E-01	5.2E-05
VOC	Vinyl Chloride	75-01-4	1.1E-01	1.2E-05	5.6E-01	2.6E-05
VOC	Xylenes (total)	1330-20-7	7.8E-02	8.7E-06	1.4E-01	5.2E-05
SVOC	Acenaphthene	83-32-9	4.2E-02	7.7E-06	3.2E-03	4.8E-04
SVOC	Acenaphthylene	208-96-8			2.3E-03	
SVOC	Anthracene	120-12-7	3.2E-02	7.7E-06	1.3E-03	8.3E-04
SVOC	Benzo(a)anthracene	56-55-3	5.1E-02	9.0E-06	6.9E-05	1.3E-02
SVOC	Benzo(a)pyrene	50-32-8	4.3E-02	9.0E-06	2.3E-05	3.8E-02
SVOC	Benzo(b)fluoranthene	205-99-2	2.3E-02	5.6E-06	2.3E-03	4.0E-04
SVOC	Benzo(g,h,i)perylene	191-24-2	2.3E-02	5.2E-05	2.9E-06	1.7E+00
SVOC	Benzo(k)fluoranthene	207-08-9	2.3E-02	5.6E-06	1.7E-05	3.1E-02
SVOC	Biphenyl	92-52-4			6.1E-03	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	3.5E-02	3.7E-06	2.1E-06	1.7E-01
SVOC	Butylbenzylphthalate	85-68-7	1.7E-02	4.8E-06	2.6E-05	1.8E-02
SVOC	Caprolactam	105-60-2				
SVOC	Carbazole	86-74-8	3.9E-02	7.0E-06	3.1E-07	2.1E+00
SVOC	Chrysene	218-01-9	2.5E-02	6.2E-06	1.9E-03	5.0E-04

Calculation of Effective Diffusion Coefficients for a Building with Basement Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan						
Chem Group	Chemical	CASRN	D <sub>air</sub> (cm <sup>2</sup> /s)	D <sub>water</sub> (cm <sup>2</sup> /s)	H (unitless)	D <sub>eff</sub> <sup>T</sup> (cm <sup>2</sup> /s)
SVOC	Dibenz(a,h)anthracene	53-70-3	2.0E-02	5.2E-06	3.0E-07	1.6E+00
SVOC	Dibenzofuran	132-64-9	2.7E-02	5.9E-06	2.6E-04	2.5E-03
SVOC	Diethylphthalate	84-66-2	2.6E-02	6.4E-06	9.3E-06	6.6E-02
SVOC	Di-n-butylphthalate	84-74-2	4.4E-02	7.9E-06	1.9E-08	3.9E+01
SVOC	Fluoranthene	206-44-0	3.0E-02	6.4E-06	3.3E-04	2.2E-03
SVOC	Fluorene	86-73-7	3.6E-02	7.9E-06	1.3E-03	8.8E-04
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.9E-02	5.7E-06	3.3E-05	1.7E-02
SVOC	2-Methylnaphthalene	91-57-6	4.8E-02	7.8E-06	1.1E-02	2.3E-04
SVOC	Methylphenol (total)	1319-77-3	7.4E-02	9.3E-06	1.8E-05	5.1E-02
SVOC	Naphthalene	91-20-3	5.9E-02	7.5E-06	9.9E-03	2.6E-04
SVOC	Pentachlorophenol	87-86-5	5.6E-02	6.1E-06	5.0E-07	1.2E+00
SVOC	Phenanthrene	85-01-8	3.3E-02	7.5E-06	4.8E-04	1.8E-03
SVOC	Phenol	108-95-2	8.2E-02	9.1E-06	8.2E-06	1.1E-01
SVOC	Pyrene	129-00-0	2.7E-02	7.2E-06	2.3E-04	3.4E-03
P/PCB	PCBs (total)	1336-36-3	8.0E-02	1.0E-05	5.3E-02	1.1E-04
INORG	Mercury	7439-97-6	3.1E-02	6.3E-06	1.5E-01	3.0E-05

Calculation of Site-Specific Vapor Intrusion Criteria for Off-Site Groundwater Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan											
Chem Group	Chemical	CASRN	D <sub>air</sub>	D <sub>water</sub>	H	D <sub>crack</sub>	D <sub>eff</sub> <sup>T</sup>	α <sub>∞</sub>	C <sub>bldg</sub>	Indoor Air Limits	
			(cm <sup>2</sup> /s)	(cm <sup>2</sup> /s)	(unitless)	(cm <sup>2</sup> /s)	(cm <sup>2</sup> /s)	(L-water/m <sup>3</sup> )	10 <sup>-5</sup> Risk (mg/m <sup>3</sup> )	HQ of 1 (mg/m <sup>3</sup> )	Criteria (mg/L)
VOC	Acetone	67-64-1	1.2E-01	1.1E-05	8.0E-04	2.6E-03	2.3E-03	1.4E-05	1.1E-05	3.7E-01	3.4E+04
VOC	Benzene	71-43-2	8.8E-02	9.8E-06	1.1E-01	1.4E-03	6.6E-05	8.1E-06	9.3E-04	3.1E-03	3.1E-02
VOC	Bromomethane	74-83-9	7.3E-02	1.2E-05	1.3E-01	1.2E-03	6.7E-05	8.2E-06	1.0E-03	5.2E-03	5.0E+00
VOC	2-Butanone	78-93-3	9.5E-02	1.0E-05	1.1E-03	1.9E-03	1.5E-03	1.3E-05	1.5E-05	1.0E+00	6.8E+04
VOC	Carbon Disulfide	75-15-0	1.0E-01	1.0E-05	6.2E-01	1.7E-03	2.0E-05	4.2E-06	2.6E-03	7.3E-01	2.8E+02
VOC	Carbon Tetrachloride	56-23-5	7.8E-02	8.8E-06	6.3E-01	1.2E-03	1.7E-05	3.7E-06	2.3E-03	1.6E-03	2.1E-03
VOC	Chlorobenzene	108-90-7	7.3E-02	8.7E-06	7.6E-02	1.2E-03	7.7E-05	8.6E-06	6.5E-04	6.3E-02	9.6E+01
VOC	Chloroethane	75-00-3	1.1E-01	1.5E-06	1.8E-01	1.7E-03	1.3E-05	2.9E-06	5.3E-04	1.0E+01	2.0E+04
VOC	Chloroform	67-66-3	1.0E-01	1.0E-05	7.5E-02	1.7E-03	9.5E-05	9.3E-06	7.0E-04	1.1E-03	5.2E-02
VOC	Cumene	98-82-8	6.5E-02	7.8E-06	2.4E+01	1.0E-03	8.8E-07	2.5E-07	6.0E-03	4.2E-01	6.9E+01
VOC	Cyclohexane	110-82-7	1.1E-01	9.1E-06	4.0E+00	1.7E-03	4.5E-06	1.2E-06	4.9E-03	2.1E+01	4.3E+03
VOC	1,2-Dichlorobenzene	95-50-1	6.9E-02	7.9E-06	3.9E-02	1.1E-03	1.1E-04	9.8E-06	3.8E-04	2.1E-01	5.5E+02
VOC	1,4-Dichlorobenzene	106-46-7	6.9E-02	7.9E-06	5.0E-02	1.1E-03	9.5E-05	9.3E-06	4.6E-04	3.9E-03	8.3E-01
VOC	1,1-Dichloroethane	75-34-3	7.4E-02	1.1E-05	1.2E-01	1.2E-03	6.6E-05	8.1E-06	9.3E-04	5.2E-01	5.6E+02
VOC	1,2-Dichloroethane	107-06-2	1.0E-01	9.9E-06	2.0E-02	1.7E-03	2.3E-04	1.2E-05	2.3E-04	9.4E-04	5.2E-03
VOC	1,1-Dichloroethene	75-35-4	9.0E-02	1.0E-05	5.4E-01	1.4E-03	2.2E-05	4.5E-06	2.4E-03	2.1E-01	8.7E+01
VOC	1,2-Dichloroethene (total)	540-59-0	7.1E-02	1.2E-05	1.9E-01	1.1E-03	4.9E-05	7.1E-06	1.4E-03	3.3E-02	2.4E+01
VOC	cis-1,2-Dichloroethene	156-59-2	7.4E-02	1.1E-05	8.4E-02	1.2E-03	8.7E-05	9.0E-06	7.5E-04	3.7E-02	4.9E+01
VOC	trans-1,2-Dichloroethene	156-60-5	7.1E-02	1.2E-05	1.9E-01	1.1E-03	4.9E-05	7.1E-06	1.4E-03	7.3E-02	5.3E+01
VOC	Ethyl Benzene	100-41-4	7.5E-02	7.8E-06	1.6E-01	1.2E-03	4.2E-05	6.5E-06	1.1E-03	1.0E+00	9.9E+02
VOC	Methyl Acetate	79-20-9	1.2E-01	1.1E-05	1.8E-03	2.2E-03	1.3E-03	1.3E-05	2.4E-05	3.7E+00	1.5E+05
VOC	Methyl tert-butyl ether	1634-04-4	1.0E-01	1.1E-05	2.8E-02	1.7E-03	2.0E-04	1.1E-05	3.1E-04	2.4E-01	3.1E+00
VOC	4-Methyl-2-pentanone	108-10-1	7.5E-02	8.4E-06	2.8E-03	1.3E-03	6.7E-04	1.3E-05	3.7E-05	3.1E+00	8.5E+04
VOC	Methylcyclohexane	108-87-2	9.0E-02	8.5E-06	4.6E-01	1.4E-03	2.2E-05	4.4E-06	2.0E-03	3.1E+00	1.6E+03
VOC	Methylene Chloride	75-09-2	1.0E-01	1.2E-05	4.5E-02	1.6E-03	1.5E-04	1.1E-05	4.7E-04	5.2E-02	3.1E+00
VOC	Styrene	100-42-5	7.1E-02	8.0E-06	5.7E-02	1.1E-03	8.9E-05	9.1E-06	5.1E-04	1.0E+00	2.0E+03
VOC	Tetrachloroethene	127-18-4	7.2E-02	8.2E-06	3.8E-01	1.1E-03	2.3E-05	4.6E-06	1.7E-03	8.0E-03	4.2E-01
VOC	Toluene	108-88-3	8.7E-02	8.6E-06	1.4E-01	1.4E-03	5.3E-05	7.4E-06	1.0E-03	4.2E-01	4.2E+02
VOC	1,2,4-Trichlorobenzene	120-82-1	3.0E-02	8.2E-06	2.9E-02	4.9E-04	1.1E-04	9.6E-06	2.8E-04	2.1E-01	7.4E+02
VOC	1,1,1-Trichloroethane	71-55-6	7.8E-02	8.8E-06	3.5E-01	1.2E-03	2.6E-05	5.0E-06	1.7E-03	2.3E+00	1.3E+03
VOC	1,1,2-Trichloroethane	79-00-5	7.8E-02	8.8E-06	1.9E-02	1.3E-03	2.1E-04	1.1E-05	2.1E-04	1.5E-03	1.5E-02
VOC	Trichloroethene	79-01-6	7.9E-02	9.1E-06	2.1E-01	1.3E-03	3.9E-05	6.3E-06	1.3E-03	1.4E-02	2.2E-02
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	7.8E-02	8.2E-06	9.8E+00	1.2E-03	1.9E-06	5.4E-07	5.3E-03	1.1E+02	2.1E+04
VOC	1,2,4-Trimethylbenzene	95-63-6	6.5E-02	7.9E-06	1.2E-01	1.0E-03	5.2E-05	7.3E-06	8.4E-04	6.2E-03	7.4E+00
VOC	Vinyl Chloride	75-01-4	1.1E-01	1.2E-05	5.6E-01	1.7E-03	2.6E-05	4.9E-06	2.7E-03	2.8E-03	1.0E-01
VOC	Xylenes (total)	1330-20-7	7.8E-02	8.7E-06	1.4E-01	1.2E-03	5.2E-05	7.3E-06	1.0E-03	1.0E-01	1.0E+02
SVOC	Acenaphthene	83-32-9	4.2E-02	7.7E-06	3.2E-03	7.8E-04	4.8E-04	1.3E-05	4.0E-05	2.2E-01	5.4E+03
SVOC	Acenaphthylene	208-96-8			2.3E-03					1.1E-01	
SVOC	Anthracene	120-12-7	3.2E-02	7.7E-06	1.3E-03	7.7E-04	8.3E-04	1.3E-05	1.8E-05		
SVOC	Benzo(a)anthracene	56-55-3	5.1E-02	9.0E-06	6.9E-05	6.6E-03	1.3E-02	1.4E-05	9.5E-07	1.2E-04	1.2E+02
SVOC	Benzo(a)pyrene	50-32-8	4.3E-02	9.0E-06	2.3E-05	1.8E-02	3.8E-02	1.4E-05	3.2E-07	2.7E-05	8.6E+01

Calculation of Site-Specific Vapor Intrusion Criteria for Off-Site Groundwater Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan											
Chem Group	Chemical	CASRN	D <sub>air</sub> (cm <sup>2</sup> /s)	D <sub>water</sub> (cm <sup>2</sup> /s)	H (unitless)	D <sub>crack</sub> (cm <sup>2</sup> /s)	D <sub>eff</sub> <sup>T</sup> (cm <sup>2</sup> /s)	α <sub>∞</sub>	C <sub>bldg</sub> (L-water/m <sup>3</sup> )	Indoor Air Limits	Criteria (mg/L)
SVOC	Benzo(b)fluoranthene	205-99-2	2.3E-02	5.6E-06	2.3E-03	4.7E-04	4.0E-04	1.2E-05	2.8E-05	1.2E-04	4.1E+00
SVOC	Benzo(g,h,i)perylene	191-24-2	2.3E-02	5.2E-05	2.9E-06	7.9E-01	1.7E+00	8.1E-05	2.3E-07	1.1E-01	4.7E+05
SVOC	Benzo(k)fluoranthene	207-08-9	2.3E-02	5.6E-06	1.7E-05	1.5E-02	3.1E-02	1.4E-05	2.4E-07	1.2E-03	4.9E+03
SVOC	Biphenyl	92-52-4			6.1E-03					1.8E-01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	3.5E-02	3.7E-06	2.1E-06	7.8E-02	1.7E-01	1.6E-05	3.4E-08	6.1E-03	7.3E-02
SVOC	Butylbenzylphthalate	85-68-7	1.7E-02	4.8E-06	2.6E-05	8.5E-03	1.8E-02	1.4E-05	3.6E-07	7.3E-01	2.0E+06
SVOC	Caprolactam	105-60-2								1.8E+00	
SVOC	Carbazole	86-74-8	3.9E-02	7.0E-06	3.1E-07	9.9E-01	2.1E+00	9.9E-05	3.1E-08	4.3E-03	1.4E+05
SVOC	Chrysene	218-01-9	2.5E-02	6.2E-06	1.9E-03	5.4E-04	5.0E-04	1.3E-05	2.5E-05	1.2E-02	4.7E+02
SVOC	Dibenz(a,h)anthracene	53-70-3	2.0E-02	5.2E-06	3.0E-07	7.6E-01	1.6E+00	7.8E-05	2.3E-08	1.2E-05	5.0E+02
SVOC	Dibenzofuran	132-64-9	2.7E-02	5.9E-06	2.6E-04	1.4E-03	2.5E-03	1.4E-05	3.5E-06	7.3E-03	2.1E+03
SVOC	Diethylphthalate	84-66-2	2.6E-02	6.4E-06	9.3E-06	3.1E-02	6.6E-02	1.4E-05	1.3E-07	2.9E+00	2.3E+07
SVOC	Di-n-butylphthalate	84-74-2	4.4E-02	7.9E-06	1.9E-08	1.8E+01	3.9E+01	1.7E-03	3.2E-08		
SVOC	Fluoranthene	206-44-0	3.0E-02	6.4E-06	3.3E-04	1.3E-03	2.2E-03	1.4E-05	4.5E-06	1.5E-01	3.3E+04
SVOC	Fluorene	86-73-7	3.6E-02	7.9E-06	1.3E-03	8.4E-04	8.8E-04	1.3E-05	1.7E-05	1.5E-01	8.5E+03
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.9E-02	5.7E-06	3.3E-05	7.9E-03	1.7E-02	1.4E-05	4.5E-07	1.2E-04	2.6E+02
SVOC	2-Methylnaphthalene	91-57-6	4.8E-02	7.8E-06	1.1E-02	8.0E-04	2.3E-04	1.2E-05	1.2E-04	3.1E-03	2.6E+01
SVOC	Methylphenol (total)	1319-77-3	7.4E-02	9.3E-06	1.8E-05	2.4E-02	5.1E-02	1.4E-05	2.5E-07		
SVOC	Naphthalene	91-20-3	5.9E-02	7.5E-06	9.9E-03	9.7E-04	2.6E-04	1.2E-05	1.2E-04	3.1E-03	2.7E+01
SVOC	Pentachlorophenol	87-86-5	5.6E-02	6.1E-06	5.0E-07	5.4E-01	1.2E+00	5.7E-05	2.9E-08	7.1E-04	1.1E-01
SVOC	Phenanthrene	85-01-8	3.3E-02	7.5E-06	4.8E-04	1.2E-03	1.8E-03	1.4E-05	6.4E-06	1.1E-01	1.7E+04
SVOC	Phenol	108-95-2	8.2E-02	9.1E-06	8.2E-06	5.0E-02	1.1E-01	1.5E-05	1.2E-07		
SVOC	Pyrene	129-00-0	2.7E-02	7.2E-06	2.3E-04	1.8E-03	3.4E-03	1.4E-05	3.1E-06	1.1E-01	3.5E+04
P/PCB	PCBs (total)	1336-36-3	8.0E-02	1.0E-05	5.3E-02	1.3E-03	1.1E-04	9.8E-06	5.2E-04	4.3E-05	7.3E-05
INORG	Mercury	7439-97-6	3.1E-02	6.3E-06	1.5E-01	4.9E-04	3.0E-05	5.4E-06	7.9E-04	3.1E-04	4.0E-01

Calculation of Site-Specific Vapor Intrusion Criteria for Off-Site Groundwater Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan											
Chem Group	Chemical	CASRN	D <sub>air</sub> (cm <sup>2</sup> /s)	D <sub>water</sub> (cm <sup>2</sup> /s)	H (unitless)	D <sub>crack</sub> (cm <sup>2</sup> /s)	D <sub>eff</sub> <sup>T</sup> (cm <sup>2</sup> /s)	α <sub>∞</sub>	C <sub>bldg</sub> (L-water/m <sup>3</sup> )	Indoor Air Limits	
									10 <sup>-5</sup> Risk (mg/m <sup>3</sup> )	HQ of 1 (mg/m <sup>3</sup> )	Criteria (mg/L)
<b>Notes:</b> Crack Soil and Building Characteristics											
Bulk density	kg/L	ρ <sub>b</sub>	1.65								
Total porosity	L/L-soil	θ <sub>T</sub>	0.382								
Water-filled porosity	L/L-soil	θ <sub>w</sub>	0.220								
Air-filled porosity	L/L-soil	θ <sub>a</sub>	0.162								
Residual saturation	L/L-soil	θ <sub>r</sub>	0.035								
Hydraulic conductivity	cm/s	K	1.7E-03								
Dynamic viscosity of water	g/cm-s	μ <sub>w</sub>	0.01307								
Density of water	g/cm <sup>3</sup>	ρ <sub>w</sub>	1.0								
Gravitational acceleration	cm/s <sup>2</sup>	g	980.7								
Intrinsic permeability	cm <sup>2</sup>	k	2.3E-08								
Relative saturation	unitless	S <sub>e</sub>	0.533								
van Genuchten N	unitless	N	1.675								
van Genuchten M	unitless	M	0.403								
Relative air permeability	unitless	k <sub>rg</sub>	0.565								
Permeability to vapor	cm <sup>2</sup>	k <sub>v</sub>	1.28E-08								
Distance from building foundation to source	m	L <sub>T</sub>	0.44								
Bldg foundation thickness	m	L <sub>crack</sub>	0.15								
Bldg foundation length	m		10.56								
Bldg foundation width	m		10.56								
Bldg occupied height	m		4.88								
Bldg occupied volume	m <sup>3</sup>		544.19								
Bldg depth below ground	m		2								
Bldg area for vapor intrusion	m <sup>2</sup>	A <sub>B</sub>	196.0								
Ratio of A <sub>crack</sub> to A <sub>B</sub>		η	1E-04								
Area of cracks	m <sup>2</sup>	A <sub>crack</sub>	2.11E-02								
Air exchange rate	hour <sup>-1</sup>	ach	1.0								
Building ventilation rate	m <sup>3</sup> /s	Q <sub>bldg</sub>	1.51E-01								
Pressure difference between outdoors-indoors	kg/m·s <sup>2</sup>	ΔP	1.0								

Calculation of Site-Specific Vapor Intrusion Criteria for Off-Site Groundwater Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan												
Chem Group	Chemical	CASRN	D <sub>air</sub> (cm <sup>2</sup> /s)	D <sub>water</sub> (cm <sup>2</sup> /s)	H (unitless)	D <sub>crack</sub> (cm <sup>2</sup> /s)	D <sub>eff</sub> <sup>T</sup> (cm <sup>2</sup> /s)	α <sub>∞</sub>	C <sub>bldg</sub> (L-water/m <sup>3</sup> )	10 <sup>-5</sup> Risk (mg/m <sup>3</sup> )	HQ of 1 (mg/m <sup>3</sup> )	Criteria (mg/L)
<b>Notes:</b>	<b>Crack Soil and Building Characteristics (Continued)</b>											
Viscosity of air	kg/m·s	μ <sub>a</sub>	1.8E-05									
Crack length (bldg perimeter)	m	X <sub>crack</sub>	42.24									
Crack depth below ground	m	Z <sub>crack</sub>	2									
Crack radius	m	r <sub>crack</sub>	5E-04									
Soil gas flow rate into bldg	m <sup>3</sup> /s	Q <sub>soil</sub>	2.10E-06									

<b>Summation of Ratios of the Soil and Groundwater Concentrations to the Site-Specific Vapor Intrusion Criteria by AOI (Using Maximum Detected Concentrations)</b> <b>Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan</b>			
<b>AOI</b>	<b>Area Description</b>	<b>Soil</b>	<b>Groundwater</b>
AOI-03	Former Plating Operations (4099)		
AOI-04	Former Plating Operations (4101)		
AOI-08	Former Hard Chrome Plating Line (4082)		
AOI-09	Barrel, Rack, and U1 Plating Line (4051/4050)		
AOI-11	Executive Garage (4070)	2E-02	8E-05
AOI-13	Gridley Area (Interim Measures Work Plan) (4041)	2E-03	1E-04
AOI-14	Phosphater (4081)		
AOI-16	Udylite Plating (4081)	4E-08	
AOI-17	Nickel Plating Line (4094)		
AOI-18	Former Zinc Dichromate Plating Lines (West Plating Lines) (4100)	3E-05	
AOI-21	Waste Oil UST Tanks #4032 and #4033 (4091)	1E-04	
AOI-22	Chip Collection Area (4141)	5E-07	2E-07
AOI-23	Automatic Screw Machine Basement (4133)	4E-04	
AOI-25	Former Fire Training Area (4175)	1E-03	
AOI-26	Container Storage Area (Separate closure) (east of 4046X)	2E-03	2E-04
AOI-27	Pump House/Lift Station and Eastern Process Sewer (east property)	4E-05	
AOI-31	Former Diesel UST (Tank #4052) (between 4131 & 4095)	3E-07	
AOI-35	Former Glass Frit (4128)		
AOI-37	Former Waste Viscor UST & Sump Collection System (east of 4100)	6E-04	3E-05
AOI-45	Compactor (4085)	3E-05	
AOI-48	Groundwater	8E-04	1E-04
AOI-48 (NW)	Groundwater Northwest Corner	6E-05	3E-03
AOI-48 (SE)	Groundwater Southeast	1E-03	
AOI-48(SE)/ Blg 4111	Included in both AOI-48 (SE) and Building 4111		4E-03
AOI-49	Building 4082	8E-03	1E-04
AOI-50	Crane Bay	1E-03	
<b>Notes:</b>			
1	Summations are presented for all AOIs investigated during the RFI.		

Estimated Equilibrium Vapor Concentration of LNAPL at AOI 13 Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan									
Chem Group	Chemical	CASRN	Occupational Criteria (mg/m <sup>3</sup> )	C <sub>LNAPL</sub> (mg/kg)	VP (mm Hg)	C <sub>vapor</sub> (mg/m <sup>3</sup> )	$\alpha$	C <sub>vapor_indoor</sub> (mg/m <sup>3</sup> )	Ratio of Conc to Criteria
VOC	Cumene	98-82-8	2.5E+02	4.10E+00	4.5E+00	3.9E-01	1.5E-07	5.8E-08	2.4E-10
VOC	Ethyl Benzene	100-41-4	4.4E+02	8.30E-01	9.6E+00	1.7E-01	4.8E-06	8.1E-07	1.9E-09
VOC	Methylcyclohexane	108-87-2	2.0E+03	1.20E+01	5.2E+01	1.3E+01	3.0E-06	3.9E-05	1.9E-08
VOC	Toluene	108-88-3	3.8E+02	2.00E+00	2.8E+01	1.2E+00	5.7E-06	6.7E-06	1.8E-08
VOC	Xylenes (total)	1330-20-7	4.4E+02	1.10E+01	8.0E+00	1.8E+00	5.5E-06	1.0E-05	2.3E-08
SVOC	Phenanthrene	85-01-8		4.80E+01	1.1E-04	1.1E-04	1.3E-05	1.5E-09	
								Sum of Ratios	6E-08
<b>Notes:</b>									
	Molecular Weight of NAPL	MW <sub>LNAPL</sub>	370	g/mole					
	Temperature	T	283	K					
	Gas Constant	R	0.062361	mmHg-m <sup>3</sup> /mole/K					
LNAPL concentrations are the maximum detected concentrations at the Facility.									
The criteria are Michigan OSHA threshold limit values (TLVs), OSHA permissible exposure limits (PELs) for chemicals without Michigan OSHA TLVs, or ACGIH TLVs for chemicals without Michigan OSHA TLVs or PELs.									

Estimated Equilibrium Vapor Concentration of LNAPL at AOI 22 Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan									
Chem Group	Chemical	CASRN	Occupational Criteria (mg/m <sup>3</sup> )	C <sub>LNAPL</sub> (mg/kg)	VP (mm Hg)	C <sub>vapor</sub> (mg/m <sup>3</sup> )	α	C <sub>vapor_indoor</sub> (mg/m <sup>3</sup> )	Ratio of Conc to Criteria
VOC	Acetone	67-64-1	1.8E+03	6.60E+00	2.3E+02	3.2E+01	1.4E-05	4.6E-04	2.5E-07
VOC	Trichloroethene	79-01-6	2.7E+02	4.90E-01	7.3E+01	7.5E-01	4.6E-06	3.5E-06	1.3E-08
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	5.0E+00	1.60E+02	6.5E-06	2.2E-05	1.5E-05	3.3E-10	6.6E-11
								<b>Sum of Ratios</b>	3E-07
<b>Notes:</b>									
Molecular Weight of NAPL		MW <sub>LNAPL</sub>	370	g/mole					
Temperature		T	283	K					
Gas Constant		R	0.062361	mmHg-m3/mole/K					
LNAPL concentrations are the maximum detected concentrations at the Facility.									
The criteria are Michigan OSHA threshold limit values (TLVs), OSHA permissible exposure limits (PELs) for chemicals without Michigan OSHA TLVs, or ACGIH TLVs for chemicals without Michigan OSHA TLVs or PELs.									

Estimated Equilibrium Vapor Concentration of LNAPL at AOI 50 Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan									
Chem Group	Chemical	CASRN	Occupational Criteria (mg/m <sup>3</sup> )	C <sub>LNAPL</sub> (mg/kg)	VP (mm Hg)	C <sub>vapor</sub> (mg/m <sup>3</sup> )	$\alpha$	C <sub>vapor_indoor</sub> (mg/m <sup>3</sup> )	Ratio of Conc to Criteria
VOC	Benzene	71-43-2	3.2E+00	2.30E-01	9.5E+01	4.6E-01	6.5E-06	3.0E-06	9.3E-07
VOC	Chloroethane	75-00-3	2.6E+03	3.20E-01	1.0E+03	6.8E+00	1.9E-06	1.3E-05	4.9E-09
VOC	Chloroform	67-66-3	9.8E+00	9.00E-01	2.0E+02	3.7E+00	7.8E-06	2.9E-05	3.0E-06
VOC	Cumene	98-82-8	2.5E+02	5.80E-01	4.5E+00	5.5E-02	1.5E-07	8.2E-09	3.4E-11
VOC	Cyclohexane	110-82-7	1.1E+03	5.20E-01	9.7E+01	1.1E+00	7.5E-07	7.9E-07	7.5E-10
VOC	1,2-Dichlorobenzene	95-50-1	1.5E+02	1.90E-01	1.4E+00	5.4E-03	8.3E-06	4.5E-08	3.0E-10
VOC	1,1-Dichloroethane	75-34-3	4.0E+02	7.60E-01	2.3E+02	3.6E+00	6.4E-06	2.3E-05	5.8E-08
VOC	1,1-Dichloroethene	75-35-4	2.0E+01	6.00E-01	6.0E+02	7.5E+00	3.1E-06	2.3E-05	1.2E-06
VOC	cis-1,2-Dichloroethene	156-59-2	7.9E+02	9.90E+00	2.0E+02	4.2E+01	7.4E-06	3.1E-04	3.9E-07
VOC	trans-1,2-Dichloroethene	156-60-5	7.9E+02	8.00E-01	3.3E+02	5.6E+00	5.4E-06	3.0E-05	3.8E-08
VOC	Ethyl Benzene	100-41-4	4.4E+02	5.40E-01	9.6E+00	1.1E-01	4.8E-06	5.3E-07	1.2E-09
VOC	Methylcyclohexane	108-87-2	2.0E+03	7.30E-01	5.2E+01	7.9E-01	3.0E-06	2.4E-06	1.2E-09
VOC	Toluene	108-88-3	3.8E+02	4.80E-01	2.8E+01	2.9E-01	5.7E-06	1.6E-06	4.3E-09
VOC	Trichloroethene	79-01-6	2.7E+02	3.40E+00	7.3E+01	5.2E+00	4.6E-06	2.4E-05	9.0E-08
VOC	Vinyl Chloride	75-01-4	2.5E+00	8.30E-02	3.0E+03	5.2E+00	3.4E-06	1.8E-05	7.1E-06
VOC	Xylenes (total)	1330-20-7	4.4E+02	2.40E+00	8.0E+00	4.0E-01	5.5E-06	2.2E-06	5.1E-09
SVOC	Chrysene	218-01-9		7.10E+01	6.2E-09	9.3E-09	1.2E-05	1.1E-13	
SVOC	Phenanthrene	85-01-8		7.90E+01	1.1E-04	1.9E-04	1.3E-05	2.5E-09	
								Sum of Ratios	1E-05
<b>Notes:</b>									
	Molecular Weight of NAPL	MW <sub>LNAPL</sub>	370	g/mole					
	Temperature	T	283	K					
	Gas Constant	R	0.062361	mmHg-m3/mole/K					
LNAPL concentrations are the maximum detected concentrations at the Facility.									
The criteria are Michigan OSHA threshold limit values (TLVs), OSHA permissible exposure limits (PELs) for chemicals without Michigan OSHA TLVs, or ACGIH TLVs for chemicals without Michigan OSHA TLVs or PELs.									

**Appendix D: Risk Calculations for Potential Exposure of  
Construction Workers to LNAPL at AOI 13, AOI-22, and AOI 50**

## **APPENDIX D**

### **Risk Calculations for Potential Exposure of Construction Workers to LNAPL at AOI 13, AOI-22, and AOI 50**

#### **1.0 INTRODUCTION**

The calculations discussed in this appendix pertain to the potential exposure of workers to light nonaqueous-phase liquids (LNAPLs) at AOI-13, AOI-22, and AOI-50 while performing excavations associated with maintenance or construction activities. The potential exposure pathways evaluated include the following:

- Smear Zone Soil: incidental ingestion, dermal contact, inhalation of vapors
- LNAPL: dermal contact and inhalation of vapors

These potential exposures are believed to be the most potentially significant under current conditions at these AOIs.

#### **2.0 EXPOSURE CONCENTRATIONS**

##### **2.1 LNAPL**

The highest concentrations of each constituent in the LNAPLs at AOI-13, AOI-22, and AOI-50 are used as the exposure concentrations. The LNAPL concentrations used in the calculations are shown in the tables accompanying this appendix.

##### **2.2 Smear Zone Soil**

Soil in the depth interval within which the LNAPL layer at AOI-13, AOI-22, and AOI-50 fluctuates with the water table (the smear zone) is conservatively assumed to be completely saturated with LNAPL. The concentration of a LNAPL constituent in the smear zone soil is estimated as follows:

$$C_{soil} = C_{NAPL} \cdot \rho_{NAPL} \cdot \frac{n}{\rho_{soil}}$$

where  $C_{\text{NAPL}}$  is the concentration of the chemical in LNAPL,  $\rho_{\text{NAPL}}$  is the density of the LNAPLs (approximately 0.9 kg/L),  $n$  is the total porosity of the soil (approximately 0.38), and  $\rho_{\text{soil}}$  is the dry bulk density of the soil (approximately 1.65 kg/L). The soil porosity and bulk density are based on site-specific data presented in the Field Event #2 Data Report. This calculation assumes 100% NAPL saturation of the soil voids and is highly conservative since typical NAPL residual saturation does not exceed 20% to 50%, depending on the type of NAPL and soil. The LNAPL concentrations discussed in Section D2.1 are used for  $C_{\text{NAPL}}$ .

## 2.3 Air

### 2.3.1 Emissions from Smear Zone Soil

Vapor emissions from the smear zone soil at AOI-13, AOI-22, and AOI-50 are estimated using the model developed by Jury et al. (1990) and recommended by USEPA for screening-level assessments (USEPA 1996). The model estimates the average vapor flux over a defined period of exposure under unsteady-state conditions, assuming linear equilibrium partitioning and an infinite depth of contamination. The assumption of infinite contaminant depth is highly conservative, but does not seriously affect the conclusions in this risk evaluation.

### 2.3.2 Emissions from LNAPL

The vapor concentration of LNAPL constituents in the air as a result of emission from LNAPL that is exposed in an open excavation pit is estimated using the “oil film surface emission model.” This model is described by the equations in Table 5-7 of the USEPA guidance entitled *Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF) – Air Emission Models* (USEPA 1987). The use of this vapor emission model assumes that a layer of free-phase LNAPL will be present on the floor of the excavation pit.

As shown by the model’s equations, the oil film model is capable of accounting for depletion of constituents in the LNAPL over time as they volatilize. However, the calculations shown in the accompanying tables conservatively assume that the constituent in the exposed LNAPL layer do not deplete. This assumption is used because it is possible for the exposed LNAPL in the pit to be refreshed by “fresh” LNAPL draining into the pit, such as when workers attempt to “dewater” the pit. Because the size of excavation pits for occasional maintenance or construction activities are expected to be small relative to the size of the LNAPL plumes, “fresh” LNAPL would be available to drain into an open pit.

### **2.3.3 Air Dispersion**

The concentrations of soil and LNAPL constituents in air are estimated using air dispersion calculations provided by the USEPA screening-level air dispersion model SCREEN3 (USEPA 1995b). The area-source algorithm in SCREEN3 is used with worst-case meteorological conditions (selected by the model) to estimate maximum 1-hour concentrations at ground level. The excavation pit is approximated as a square source, since the maximum calculated air concentration is independent of wind direction. The size of the excavation pit is assumed to be 15-ft by 15-ft. The maximum 1-hour air concentrations calculated by SCREEN3 are converted to maximum 24-hour air concentrations using a conservative factor of 0.4 for on-source air concentrations. The air concentrations estimated by this approach are conservative (i.e., expected to predict higher than actual air concentrations to which workers would be exposed).

## **3.0 EXPOSURE FACTORS**

The exposure factors used for evaluating high-end exposure of workers performing excavations during occasional maintenance or construction activities are as follows:

### Soil Ingestion Rate

A soil ingestion rate of 200 mg/day is used for workers performing maintenance work that involves excavation into the soil. This rate is lower than the 480 mg/day that is often cited as USEPA's recommended soil ingestion rate for excavation or construction scenarios (USEPA 1991a). However, the 480 mg/day rate is based on an assumption regarding soil adherence to hands that has been shown in recent USEPA-funded field studies to overestimate (by 3 to 4-fold) soil adherence to hands during various excavation and construction activities.

Replacing the earlier soil adherence assumption with soil adherence data from the USEPA-funded studies (USEPA 1997a) would give a soil ingestion rate of approximately 120 mg/kg to 160 mg/kg. Therefore, using a rate of 200 mg/kg is conservative.

### Soil Dermal Contact Rate and Absorption

The dermal contact rate is the product of the exposed skin surface area and the soil-to-skin adherence factor. The exposed skin area of 3,300 cm<sup>2</sup> and the soil-to-skin adherence factor of 0.2 mg/cm<sup>2</sup> are the USEPA-recommended skin area and adherence factor for evaluating high-end contact with soil by workers in industrial settings (USEPA 2001). The absorbed dose from dermal contact with soil is estimated by multiplying the dermal contact rate by USEPA-recommended absorption factors for absorption from soil (USEPA 2001).

### LNAPL Dermal Contact Rate

The exposed skin surface area of 3,300 cm<sup>2</sup> is the same exposed skin surface area for exposure to soil, as discussed above. Workers are assumed to be covered with LNAPL over

this exposed skin surface area for 2 hours per day. The absorbed dose for organic chemicals is estimated using the nonsteady-state approach suggested by USEPA (2001), which is more conservative than the steady-state approach recommended in early guidance (USEPA 1989), particularly for hydrophobic organic compounds. The permeability coefficient ( $K_p$ ) for dermal absorption of organic chemicals from LNAPL is estimated following USEPA guidance (1992).

#### Exposure Frequency and Duration

The total number of days of occasional maintenance or construction that involves actual excavation into the smear zone and water table is assumed to be 50 days, which is assumed to occur at an exposure frequency of 5 days/year for an exposure duration of 10 years. This combination of exposure frequency and exposure duration is expected to be conservative for the amount of time these workers are actually in contact with LNAPL and LNAPL-saturated soil (as opposed to the total time for maintenance or construction, which typically includes time not associated with excavation). For perspective, the frequency of 5 days/year is expected to be equivalent to the excavation time for a few small repairs per year or one larger repair. The duration of 10 years is more than twice the length of time that workers typically work at one location.

#### Body Weight

The body weight of 70 kg is the standard USEPA-recommended body weight for assessing exposure to adults (USEPA 1989).

#### Averaging Time

The averaging time for evaluating cancer risk is equal to a lifetime of 70 years, and the averaging time for evaluating noncancer risk is equal to the exposure duration (USEPA 1989).

## **4.0 TOXICITY ASSESSMENT**

The toxicity values used in the calculation of risk are shown in the accompanying tables. They are compiled following USEPA's hierarchy of sources, as follows:

1. Integrated Risk Information System (IRIS)
2. Health Effects Assessment Summary Tables (HEAST)
3. National Center for Environmental Assessment (NCEA)

The specific source of each toxicity value is noted on the accompanying tables.

## **5.0 CANCER RISK AND NONCANCER HAZARD INDEX**

The cancer risk associated with potential exposure to a carcinogenic chemical is calculated by multiplying an estimate of the lifetime average daily dose (LADD) for a particular exposure scenario by the cancer slope factor (SF) for the chemical, as follows:

$$Risk = LADD \cdot SF$$

For the inhalation route, the inhalation cancer risk is calculated using the chemical concentration in air ( $C_{air}$ ) and the URF, as follows:

$$Risk = C_{air} \cdot URF \cdot \frac{EF \cdot ED}{AT}$$

where EF is exposure frequency, ED is exposure duration, and AT is averaging time.

The noncancer hazard quotient (HQ) associated with potential exposure to a noncarcinogenic chemical is calculated by dividing an estimate of the average daily dose (ADD) for a particular exposure scenario by the reference dose (RfD) for the chemical, as follows:

$$HQ = \frac{ADD}{RfD}$$

For the inhalation route, the inhalation HQ is calculated using  $C_{air}$  and the RfC, as follows:

$$HQ = \frac{C_{air}}{RfC} \cdot \frac{EF \cdot ED}{AT}$$

The calculated cancer risk and HQ for each constituent for each route of exposure are provided in the accompanying tables.

The potential cancer risk and noncancer effects that may result from exposure to the combination of constituents at an area are estimated following USEPA guidance (USEPA 1989), as follows:

$$Cumulative Risk = \sum_i Risk_i$$

$$Hazard Index = \sum_i HQ_i$$

where:

- Risk<sub>i</sub> = estimated cancer risk for the *i*th constituent  
HQ<sub>i</sub> = hazard quotient for the *i*th constituent

This approach may result in estimates of cumulative cancer and noncancer risks that are more conservative than necessary. For example, different chemicals may cause different and unrelated health effects, so that summing the HQs for their individual effects would overestimate the significance of their combined effects. Nonetheless, this approach is used here as a conservative assessment tool. The cumulative cancer risk and HI estimates for each exposure route are shown in the accompanying tables.

**Attachment to Appendix D**

Toxicity Values																						
Chem Group			Chemical		CASRN			Cancer Class			SF <sub>oral</sub> (mg/kg/d) <sup>-1</sup>			RfD <sub>oral</sub> (mg/kg/d)			URF (ug/m <sup>3</sup> ) <sup>-1</sup>			RfC (mg/m <sup>3</sup> )		
								Value	Ref	Notes	Value	Ref	Notes	Value	UF	Ref	Notes	Value	Ref	Notes	Value	UF
VOC	Acetone		67-64-1	D	1						1.0E-01	1000	1					3.5E-01	1000	1	4,44	
VOC	Benzene		71-43-2	A	1		5.5E-02	1	68	4.0E-03	300	1		7.8E-06	1	60	3.0E-02	300	1			
VOC	Chloroethane		75-00-3							4.0E-01		3					1.0E+01	300	1			
VOC	Chloroform		67-66-3	B2	1					1.0E-02	1000	1		2.3E-05	1		5.0E-02	100	117			
VOC	Cumene		98-82-8	D	1					1.0E-01	1000	1					4.0E-01	1000	1			
VOC	Cyclohexane		110-82-7														2.0E+01		4	44		
VOC	1,2-Dichlorobenzene		95-50-1	D	1					9.0E-02	1000	1					2.0E-01	1000	2	3		
VOC	1,1-Dichloroethane		75-34-3	C	1					1.0E-01	1000	2	26,6				5.0E-01	1000	2	3		
VOC	1,1-Dichloroethene		75-35-4	C	1					5.0E-02	100	1					2.0E-01	30	1			
VOC	cis-1,2-Dichloroethene		156-59-2	D	1					1.0E-02	3000	2	6				3.5E-02	3000	2	6,4,44		
VOC	trans-1,2-Dichloroethene		156-60-5							2.0E-02	1000	1					7.0E-02	1000	1	4,44		
VOC	Ethyl Benzene		100-41-4	D	1					1.0E-01	1000	1					1.0E+00	300	1			
VOC	Methylcyclohexane		108-87-2														3.0E+00	100	2			
VOC	Toluene		108-88-3	D	1					2.0E-01	1000	1					4.0E-01	300	1			
VOC	Trichloroethene		79-01-6	C-B2	49	18	1.1E-02	49		6.0E-03	3000	46	6, 97	1.7E-06	49		2.1E-02	3000	46	6, 97, 4,44		
VOC	Vinyl Chloride		75-01-4	A	1		1.4E+00	1	78	3.0E-03	30	1		8.8E-06	1	79	1.0E-01	30	1			
VOC	Xylenes (total)		1330-20-7	ID	1					2.0E-01	1000	1					1.0E-01	300	1			
SVOC	bis(2-Ethylhexyl)phthalate		117-81-7	B2	1		1.4E-02	1		2.0E-02	1000	1		4.0E-06	3	45	7.0E-02	1000	1	4,44		
SVOC	Chrysene		218-01-9	B2	1		7.3E-03	10	5					2.1E-06	10	5,4,45						
SVOC	Phenanthrene		85-01-8	D	1					3.0E-02	3000	1	20				1.1E-01	3000	1	20,4,44		

**Toxicity Values**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

**References:**

- 1 USEPA. Integrated Risk Information System (IRIS). On-line database.
- 2 USEPA. 1997. Health Effects Assessment Summary Tables (HEAST). FY-1997 Update. EPA 540/R-97-036. July.
- 3 USEPA. Region III. 2003. Risk-Based Concentration Table. April.
- 4 USEPA. Region IX. 2002. Preliminary Remediation Goal Table. October.
- 10 USEPA. 1993. Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons. EPA/600/2-93/089. July.
- 46 USEPA. NCEA. 1995. Risk Assessment Issue paper for: Provisional oral RfD for Trichloroethylene [CASRN 79-01-6].
- 49 USEPA. NCEA. 1995. Risk Assessment Issue paper for: Carcinogenicity Information for Trichloroethylene (TCE) [CASRN 79-01-6]. September 6.
- 117 USEPA. NCEA. 2003. Risk Assessment Issue Paper for: Derivation of Provisional Subchronic and Chronic RfCs for Chloroform [CASRN 67-66-3]. January 23.

**Notes:**

- 3 HEAST Alternate Method.
- 4 ENVIRON obtained value by route-to-route extrapolation.
- 5 Based on analogy to Benzo(a)pyrene [CASRN 50-32-8] using USEPA relative potency described in the indicated reference.
- 6 Under review, according to IRIS.
- 18 Not verifiable, according to IRIS.
- 20 ENVIRON used Pyrene [CASRN 129-00-0] value from IRIS (reference 1) as a surrogate.
- 26 USEPA obtained value by route-to-route extrapolation.
- 44 ENVIRON derived CRFC from CRFDI value presented in the indicated reference, using standard USEPA methodology presented in HEAST.
- 45 ENVIRON derived URFI from CSFI value presented in the indicated reference, using standard USEPA methodology presented in HEAST.
- 60 IRIS provides a range of 2.2E-6 to 7.8E-6 (ug/m<sup>3</sup>)-1 as the Inhalation Unit Risk Factor (URF) for Benzene.
- 79 IRIS recommends an Inhalation Unit Risk(URFI) for Vinyl Chloride of 4.4E-6 (ug/m<sup>3</sup>)-1 to account for continuous lifetime exposure during adulthood; a twofold increase to 8.8E-6 (ug/m<sup>3</sup>)-1 is recommended to account for continuous exposure from birth.
- 97 ENVIRON used withdrawn source.

Physical and Chemical Information Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan																																	
Chem Group	Chemical	CASRN	MW (g/mole)			K <sub>ow</sub> (unitless)			K <sub>oc</sub> (L/kg)			H (unitless)			s (mg/L)			VP (mm Hg)			D <sub>air</sub> (cm <sup>2</sup> /s)			D <sub>water</sub> (cm <sup>2</sup> /s)			K <sub>p</sub> (cm/hr)			ABS <sub>d</sub> (unitless)			
			Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	
VOC	Acetone	67-64-1	5.8E+01	50		5.8E-01	44		5.8E-01	44		1.6E-03	44		1.0E+06	44		2.3E+02	50	92	1.2E-01	44		1.1E-05	44		5.7E-04	44	70	0.00E+00	62		
VOC	Benzene	71-43-2	7.8E+01	50		1.3E+02	44		5.9E+01	44		2.3E-01	44		1.8E+03	44		9.5E+01	50	92	8.8E-02	44		9.8E-06	44		1.5E-02	62		0.00E+00	62		
VOC	Chloroethane	75-00-3	6.5E+01	50		2.7E+01	1		1.5E+01	3		3.6E-01	50	92	5.7E+03	50	92	1.0E+03	50	92	1.1E-01	36	27	1.5E-06	65		6.1E-03	62	104	0.00E+00	62		
VOC	Chloroform	67-66-3	1.2E+02	50		8.3E+01	44		4.0E+01	44		1.5E-01	44		7.9E+03	44		2.0E+02	50	92	1.0E-01	44		1.0E-05	44		6.8E-03	62	104	0.00E+00	62		
VOC	Cumene	98-82-8	1.2E+02	50		4.6E+03	1		3.3E+03	40		4.7E+01	50	92	6.1E+01	50	92	4.5E+00	50	92	6.5E-02	65		7.8E-06	65		1.4E-01	1	70	0.00E+00	62		
VOC	Cyclohexane	110-82-7	8.4E+01	50								8.0E+00	50	92	5.5E+01	50	92	9.7E+01	50	92	1.1E-01	52		9.1E-06	52					0.00E+00	62		
VOC	1,2-Dichlorobenzene	95-50-1	1.5E+02	50		2.7E+03	44		6.2E+02	44		7.8E-02	44		1.6E+02	44		1.4E+00	50	92	6.9E-02	44		7.9E-06	44		4.1E-02	62		0.00E+00	62		
VOC	1,1-Dichloroethane	75-34-3	9.9E+01	50		6.2E+01	44		3.2E+01	44		2.3E-01	44		5.1E+03	44		2.3E+02	50	92	7.4E-02	44		1.1E-05	44		6.7E-03	62	104	0.00E+00	62		
VOC	1,1-Dichloroethene	75-35-4	9.7E+01	50		1.3E+02	44		5.9E+01	44		1.1E+00	44		2.3E+03	44		6.0E+02	50	92	9.0E-02	44		1.0E-05	44		1.2E-02	62	104	0.00E+00	62		
VOC	cis-1,2-Dichloroethylene	156-59-2	9.7E+01	50		7.2E+01	44		3.6E+01	44		1.7E-01	44		3.5E+03	44		2.0E+02	50	92	7.4E-02	44		1.1E-05	44		1.0E-02	44	70	0.00E+00	62		
VOC	trans-1,2-Dichloroethylene	156-60-5	9.7E+01	50		1.2E+02	44		5.3E+01	44		3.9E-01	44		6.3E+03	44		3.3E+02	50	92	7.1E-02	44		1.2E-05	44		1.4E-02	44	70	0.00E+00	62		
VOC	Ethyl Benzene	100-41-4	1.1E+02	50		1.4E+03	44		3.6E+02	44		3.2E-01	44		1.7E+02	44		9.6E+00	50	92	7.5E-02	44		7.8E-06	44		4.9E-02	62		0.00E+00	62		
VOC	Methylcyclohexane	108-87-2	9.8E+01	55		9.2E+02	52					9.2E-01	52						5.2E+01	52		9.0E-02	52		8.5E-06	52					0.00E+00	62	
VOC	Toluene	108-88-3	9.2E+01	50		5.6E+02	44		1.8E+02	44		2.7E-01	44		5.3E+02	44		2.8E+01	50	92	8.7E-02	44		8.6E-06	44		3.1E-02	62		0.00E+00	62		
VOC	Trichloroethene	79-01-6	1.3E+02	50		5.1E+02	44		1.7E+02	44		4.2E-01	44		1.1E+03	44		7.3E+01	50	92	7.9E-02	44		9.1E-06	44		1.2E-02	62	104	0.00E+00	62		
VOC	Vinyl Chloride	75-01-4	6.3E+01	50		3.2E+01	44		1.9E+01	44		1.1E+00	44		2.8E+03	44		3.0E+03	50	92	1.1E-01	44		1.2E-05	44		5.6E-03	62	104	0.00E+00	62		
VOC	Xylenes (total)	1330-20-7	1.1E+02	50		1.5E+03	65		3.9E+02	44		2.8E-01	44		1.7E+02	44		8.0E+00	50	92	7.8E-02	44		8.7E-06	44					0.00E+00	62		
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	3.9E+02	50		2.0E+07	44		1.5E+07	44		4.2E-06	44		3.4E-01	44		6.5E-06	50	94	3.5E-02	44		3.7E-06	44		2.5E-02	62		1.00E-01	62		
SVOC	Chrysene	218-01-9	2.3E+02	50		5.0E+05	44		4.0E+05	44		3.9E-03	44		1.6E-03	44		6.2E-09	50	92	2.5E-02	44		6.2E-06	44		4.7E-01	62	103	1.30E-01	62		
SVOC	Phenanthrene	85-01-8	1.8E+02	50		2.9E+04	1		1.4E+04	3		9.5E-04	50	92	1.2E+00	50	92	1.1E-04	50	92	3.3E-02	65		7.5E-06	65		1.4E-01	62	103	1.30E-01	62		

**Physical and Chemical Information**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

**References:**

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- 55 W.G. Mallard and P.J. Linstrom, Eds., NIST Chemistry WebBook, NIST Standard Reference Database Number 69, March, 2003, National Institute of Standards and Technology, Gaithersburg MD, 20899
- 62 USEPA. 2001. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim -- Review Draft-For Public Comment.
- 65 USEPA. July 1998. Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities.

**Notes:**

- 27 Diffusivity value at 30 degrees Celcius.
- 70 ENVIRON calculated K<sub>p</sub> value using equation 5.8 (p.5-38) in reference 43 with log K<sub>ow</sub> from the indicated reference and the MW presented in table.
- 92 Indicated source cites CHEMFATE.
- 94 Indicated source cites LIVECHEM.
- 103 Identified as outside the effective prediction domain
- 104 Halogenated compound

**Concentrations of Chemicals in LNAPL**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Chem Group	Chemical	CASRN	AOI 13 (mg/kg)	AOI-22 (mg/kg)	AOI 50 (mg/kg)
VOC	Acetone	67-64-1		6.60E+00	
VOC	Benzene	71-43-2			2.30E-01
VOC	Chloroethane	75-00-3			3.20E-01
VOC	Chloroform	67-66-3			9.00E-01
VOC	Cumene	98-82-8	4.10E+00		5.80E-01
VOC	Cyclohexane	110-82-7			5.20E-01
VOC	1,2-Dichlorobenzene	95-50-1			1.90E-01
VOC	1,1-Dichloroethane	75-34-3			7.60E-01
VOC	1,1-Dichloroethene	75-35-4			6.00E-01
VOC	cis-1,2-Dichloroethene	156-59-2			9.90E+00
VOC	trans-1,2-Dichloroethene	156-60-5			8.00E-01
VOC	Ethyl Benzene	100-41-4	8.30E-01		5.40E-01
VOC	Methylcyclohexane	108-87-2	1.20E+01		7.30E-01
VOC	Toluene	108-88-3	2.00E+00		4.80E-01
VOC	Trichloroethene	79-01-6		4.90E-01	3.40E+00
VOC	Vinyl Chloride	75-01-4			8.30E-02
VOC	Xylenes (total)	1330-20-7	1.10E+01		2.40E+00
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7		1.60E+02	
SVOC	Chrysene	218-01-9			7.10E+01
SVOC	Phenanthrene	85-01-8	4.80E+01		7.90E+01
<b>Notes:</b>					
All concentrations are the maximum values detected.					
LNAPL densities range from 0.84 to 0.99.					
	LNAPL density (average)	0.90			
	Soil bulk density	2.04			
	Soil total porosity	0.22			
	LNAPL saturation	100%			

**High-End Exposure Factors**  
**Delphi Energy and Chassis Systems Dort Highway Facility,**  
**Flint, Michigan**

			<b>Construction Scenario</b>
<b>Soil Ingestion</b>			
Ingestion Rate	mg-soil/day	<b>IR</b>	200
Conversion Factor	kg/mg	<b>CF</b>	1E-06
Fraction Contacted	unitless	<b>FC</b>	1.0
Exposure Frequency	days/year	<b>EF</b>	5
Expoure Duration	years	<b>ED</b>	10
Body Weight	kg	<b>BW</b>	70
Averaging Time, cancer	days	<b>AT<sub>c</sub></b>	25,550
Averaging Time, noncancer	days	<b>AT<sub>nc</sub></b>	3,650
<b>Soil Dermal Contact</b>			
Adherence Factor	mg-soil/cm <sup>2</sup>	<b>AF</b>	0.2
Skin Surface Area	cm <sup>2</sup> /day	<b>SA</b>	3,300
Conversion Factor	kg/mg	<b>CF</b>	1E-06
Fraction Contacted	unitless	<b>FC</b>	1.0
Exposure Frequency	days/year	<b>EF</b>	5
Expoure Duration	years	<b>ED</b>	10
Body Weight	kg	<b>BW</b>	70
Averaging Time, cancer	days	<b>AT<sub>c</sub></b>	25,550
Averaging Time, noncancer	days	<b>AT<sub>nc</sub></b>	3,650
<b>Ambient Air Inhalation</b>			
Exposure Frequency	days/year	<b>EF</b>	5
Expoure Duration	years	<b>ED</b>	10
Averaging Time, cancer	days	<b>AT<sub>c</sub></b>	25,550
Averaging Time, noncancer	days	<b>AT<sub>nc</sub></b>	3,650
<b>Oil Dermal Contact</b>			
Event Time	hr	<b>t</b>	2
Skin Surface Area	cm <sup>2</sup>	<b>SA</b>	3,300
Events per Day	1/d	<b>EV</b>	1
Exposure Frequency	d/yr	<b>EF</b>	5
Exposure Duration	yr	<b>ED</b>	10
Body Weight	kg-bw	<b>BW</b>	70
Averaging Time, carc	d	<b>AT<sub>c</sub></b>	25,550
Averaging Time, noncarc	d	<b>AT<sub>nc</sub></b>	3,650

**Estimated Ambient Air Concentration from Excavation Into Soil with Free-Phase LNAPL at AOI 13 LNAPL Area  
Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

<b>Chem Group</b>	<b>Chemical</b>	<b>CASRN</b>	<b>C<sub>NAPL</sub> (mg/kg)</b>	<b>MW (g/mole)</b>	<b>K<sub>eq</sub> (unitless)</b>	<b>D<sub>air</sub> (cm<sup>2</sup>/s)</b>	<b>Sc</b>	<b>k<sub>G</sub> (m/s)</b>	<b>K (m/s)</b>	<b>J<sub>L</sub> (mg/m<sup>2</sup>-s)</b>	<b>C<sub>air, worker</sub> (mg/m<sup>3</sup>)</b>
VOC	Acetone	67-64-1		5.8E+01	5.5E-03	1.2E-01	1.1E+00	2.2E-03	1.2E-05		
VOC	Benzene	71-43-2		7.8E+01	2.3E-03	8.8E-02	1.6E+00	1.7E-03	3.9E-06		
VOC	Chloroethane	75-00-3		6.5E+01	2.4E-02	1.1E-01	1.3E+00	2.0E-03	4.8E-05		
VOC	Chloroform	67-66-3		1.2E+02	4.7E-03	1.0E-01	1.3E+00	1.9E-03	9.1E-06		
VOC	Cumene	98-82-8	4.10E+00	1.2E+02	1.1E-04	6.5E-02	2.1E+00	1.4E-03	1.5E-07	5.7E-04	6.2E-03
VOC	Cyclohexane	110-82-7		8.4E+01	2.3E-03	1.1E-01	1.3E+00	2.0E-03	4.6E-06		
VOC	1,2-Dichlorobenzene	95-50-1		1.5E+02	3.3E-05	6.9E-02	2.0E+00	1.5E-03	4.8E-08		
VOC	1,1-Dichloroethane	75-34-3		9.9E+01	5.4E-03	7.4E-02	1.9E+00	1.5E-03	8.3E-06		
VOC	1,1-Dichloroethene	75-35-4		9.7E+01	1.4E-02	9.0E-02	1.6E+00	1.7E-03	2.5E-05		
VOC	cis-1,2-Dichloroethene	156-59-2		9.7E+01	4.8E-03	7.4E-02	1.9E+00	1.5E-03	7.4E-06		
VOC	trans-1,2-Dichloroethene	156-60-5		9.7E+01	8.0E-03	7.1E-02	2.0E+00	1.5E-03	1.2E-05		
VOC	Ethyl Benzene	100-41-4	8.30E-01	1.1E+02	2.3E-04	7.5E-02	1.9E+00	1.5E-03	3.5E-07	2.7E-04	2.9E-03
VOC	Methylcyclohexane	108-87-2	1.20E+01	9.8E+01	1.2E-03	9.0E-02	1.6E+00	1.7E-03	2.2E-06	2.4E-02	2.6E-01
VOC	Toluene	108-88-3	2.00E+00	9.2E+01	6.8E-04	8.7E-02	1.6E+00	1.7E-03	1.2E-06	2.1E-03	2.3E-02
VOC	Trichloroethylene	79-01-6		1.3E+02	1.8E-03	7.9E-02	1.8E+00	1.6E-03	2.8E-06		
VOC	Vinyl Chloride	75-01-4		6.3E+01	7.1E-02	1.1E-01	1.3E+00	1.9E-03	1.4E-04		
VOC	Xylenes (total)	1330-20-7	1.10E+01	1.1E+02	1.9E-04	7.8E-02	1.8E+00	1.6E-03	3.0E-07	3.0E-03	3.3E-02
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7		3.9E+02	1.5E-10	3.5E-02	4.0E+00	9.3E-04	1.4E-13		
SVOC	Chrysene	218-01-9		2.3E+02	1.5E-13	2.5E-02	5.6E+00	7.4E-04	1.1E-16		
SVOC	Phenanthrene	85-01-8	4.80E+01	1.8E+02	2.7E-09	3.3E-02	4.2E+00	9.0E-04	2.4E-12	1.1E-07	1.2E-06
<b>Notes:</b>											
<i>Physical Properties of Air</i>											
	Pressure		1 atm	assumed							
	Molecular Weight		28.8 g/g mol	Perry and Chilton (1973)							
	Viscosity		1.80E-04 g/(cm.s)	Perry and Chilton (1973)							
	Density		0.00129 g/cm <sup>3</sup>	Perry and Chilton (1973)							
<i>Physical Properties of NAPL</i>											
	Molecular Weight		370 g/g mol								
	Density		0.91 g/cm <sup>3</sup>								
<i>Physical Characteristics of Excavation Pit</i>											
	Windspeed		0.5 m/s	assumed							
	Surface Area		2.1E+01 m <sup>2</sup>								
	Effective Diameter of Area		5.2E+00 m	calculated							

Estimated Concentrations in Ambient Air from Excavations into Smear Zone Soil Containing LNAPL at AOI 13 Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan							
			Vapor			PM <sub>10</sub>	
		C/Q (kg/m <sup>3</sup> per kg/m <sup>2</sup> -s):		1.1E+01		1.1E+01	
Chem Chem	Chemical	CASRN	C <sub>soil</sub> (mg/kg)	C <sub>source</sub> (mg/kg)	C <sub>air</sub> (mg/m <sup>3</sup> )	C <sub>soil</sub> (mg/kg)	C <sub>air</sub> (mg/m <sup>3</sup> )
VOC	Acetone	67-64-1					
VOC	Benzene	71-43-2					
VOC	Chloroethane	75-00-3					
VOC	Chloroform	67-66-3					
VOC	Cumene	98-82-8	8.5E-01	8.5E-01	6.2E-04	8.5E-01	5.0E+00
VOC	Cyclohexane	110-82-7					
VOC	1,2-Dichlorobenzene	95-50-1					
VOC	1,1-Dichloroethane	75-34-3					
VOC	1,1-Dichloroethene	75-35-4					
VOC	cis-1,2-Dichloroethene	156-59-2					
VOC	trans-1,2-Dichloroethene	156-60-5					
VOC	Ethyl Benzene	100-41-4	1.7E-01	1.7E-01	3.9E-05	1.7E-01	1.0E+00
VOC	Methylcyclohexane	108-87-2	2.5E+00			2.5E+00	1.5E+01
VOC	Toluene	108-88-3	4.2E-01	4.2E-01	1.3E-04	4.2E-01	2.4E+00
VOC	Trichloroethene	79-01-6					
VOC	Vinyl Chloride	75-01-4					
VOC	Xylenes (total)	1330-20-7	2.3E+00	2.3E+00	4.7E-04	2.3E+00	1.3E+01
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7					
SVOC	Chrysene	218-01-9					
SVOC	Phenanthrene	85-01-8	1.0E+01	1.0E+01	4.6E-05	1.0E+01	5.8E+01
<b>Notes:</b>							
C <sub>SZ soil</sub> = Smear Zone Soil Concentration							
C <sub>source</sub> = Minimum of Smear Zone Soil Concentration and C <sub>sat</sub>							
Italicized C <sub>source</sub> values are based on saturated soil concentrations.							

Nonsteady State Dermal Absorption of Chemical from LNAPL at AOI 13 Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan												
Chem Group	Chemical	CASRN	MW (g/mole)	K <sub>ow</sub> (unitless)	K <sub>p</sub> (cm/hr)	B (unitless)	τ (hr)	c	b	ts (hr)	FA (unitless)	DA (L/cm <sup>2</sup> -event)
VOC	Acetone	67-64-1	5.8E+01	5.8E-01	9.0E-04	2.7E-03	2.2E-01	3.4E-01	3.0E-01	5.3E-01	1.0E+00	2.2E-06
VOC	Benzene	71-43-2	7.8E+01	1.3E+02	1.1E-04	3.7E-04	2.9E-01	3.3E-01	3.0E-01	6.9E-01	1.0E+00	2.8E-07
VOC	Chloroethane	75-00-3	6.5E+01	2.7E+01	2.3E-04	7.0E-04	2.4E-01	3.3E-01	3.0E-01	5.8E-01	1.0E+00	5.6E-07
VOC	Chloroform	67-66-3	1.2E+02	8.3E+01	7.6E-05	3.2E-04	4.9E-01	3.3E-01	3.0E-01	1.2E+00	1.0E+00	2.3E-07
VOC	Cumene	98-82-8	1.2E+02	4.6E+03	1.9E-05	8.1E-05	5.0E-01	3.3E-01	3.0E-01	1.2E+00	1.0E+00	5.7E-08
VOC	Cyclohexane	110-82-7	8.4E+01				3.1E-01	3.3E-01	3.0E-01	7.5E-01	1.0E+00	
VOC	1,2-Dichlorobenzene	95-50-1	1.5E+02	2.7E+03	1.6E-05	7.6E-05	7.0E-01	3.3E-01	3.0E-01	1.7E+00	1.0E+00	5.5E-08
VOC	1,1-Dichloroethane	75-34-3	9.9E+01	6.2E+01	1.1E-04	4.2E-04	3.8E-01	3.3E-01	3.0E-01	9.0E-01	1.0E+00	3.0E-07
VOC	1,1-Dichloroethene	75-35-4	9.7E+01	1.3E+02	8.6E-05	3.2E-04	3.7E-01	3.3E-01	3.0E-01	8.8E-01	1.0E+00	2.3E-07
VOC	cis-1,2-Dichloroethene	156-59-2	9.7E+01	7.2E+01	1.1E-04	4.0E-04	3.7E-01	3.3E-01	3.0E-01	8.8E-01	1.0E+00	2.9E-07
VOC	trans-1,2-Dichloroethene	156-60-5	9.7E+01	1.2E+02	9.0E-05	3.4E-04	3.7E-01	3.3E-01	3.0E-01	8.8E-01	1.0E+00	2.5E-07
VOC	Ethyl Benzene	100-41-4	1.1E+02	1.4E+03	3.5E-05	1.4E-04	4.1E-01	3.3E-01	3.0E-01	9.9E-01	1.0E+00	9.8E-08
VOC	Methylcyclohexane	108-87-2	9.8E+01	9.2E+02	4.4E-05	1.7E-04	3.7E-01	3.3E-01	3.0E-01	9.0E-01	1.0E+00	1.2E-07
VOC	Toluene	108-88-3	9.2E+01	5.6E+02	5.6E-05	2.1E-04	3.5E-01	3.3E-01	3.0E-01	8.3E-01	1.0E+00	1.5E-07
VOC	Trichloroethene	79-01-6	1.3E+02	5.1E+02	3.5E-05	1.5E-04	5.7E-01	3.3E-01	3.0E-01	1.4E+00	1.0E+00	1.1E-07
VOC	Vinyl Chloride	75-01-4	6.3E+01	3.2E+01	2.2E-04	6.7E-04	2.4E-01	3.3E-01	3.0E-01	5.7E-01	1.0E+00	5.4E-07
VOC	Xylenes (total)	1330-20-7	1.1E+02	1.5E+03	3.4E-05	1.3E-04	4.1E-01	3.3E-01	3.0E-01	9.9E-01	1.0E+00	9.5E-08
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	3.9E+02	2.0E+07	3.4E-08	2.6E-07	1.6E+01	3.3E-01	3.0E-01	3.9E+01	8.0E-01	4.3E-10
SVOC	Chrysene	218-01-9	2.3E+02	5.0E+05	9.6E-07	5.6E-06	2.0E+00	3.3E-01	3.0E-01	4.8E+00	1.0E+00	5.3E-09
SVOC	Phenanthrene	85-01-8	1.8E+02	2.9E+04	4.8E-06	2.5E-05	1.0E+00	3.3E-01	3.0E-01	2.5E+00	1.0E+00	1.9E-08
<b>Note:</b>	Event Time		hours	t	2.0E+00							

**Construction Scenario Cancer Risk Calculations - AOI 13 LNAPL Area  
Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Chem Group	Chemical	CASRN	Cancer Class	Smear Zone Soil Ingestion				Smear Zone Soil Dermal Contact				Smear Zone Soil Vapor Inhalation				LNAPL Dermal Contact				LNAPL Vapor Inhalation						
				C <sub>soil</sub> (mg/kg)	LADD (mg/kg/d)	SF <sub>oral</sub> (mg/kg/d) <sup>-1</sup>	Risk	A <sub>F</sub> <sub>derm</sub>	LADD (mg/kg/d)	SF <sub>derm</sub> (mg/kg/d) <sup>-1</sup>	Risk	C <sub>air</sub> (mg/m <sup>3</sup> )	C <sub>air</sub> (mg/m <sup>3</sup> )	URF (m <sup>3</sup> /mg)	Risk	C <sub>NAPL</sub> (mg/L)	DA (L/cm <sup>2</sup> )	LADD (mg/kg/d)	SF <sub>derm</sub> (mg/kg/d) <sup>-1</sup>	Risk	C <sub>air</sub> (mg/m <sup>3</sup> )	C <sub>air</sub> (mg/m <sup>3</sup> )	URF (m <sup>3</sup> /mg)	Risk		
VOC	Acetone	67-64-1	D														2.2E-06									
VOC	Benzene	71-43-2	A			5.5E-02				5.5E-02						7.8E-03			2.8E-07	5.5E-02				7.8E-03		
VOC	Chloroethane	75-00-3																	5.6E-07							
VOC	Chloroform	67-66-3	B2													2.3E-02			2.3E-07						2.3E-02	
VOC	Cumene	98-82-8	D	8.66E-01	4.8E-09								6.3E-04	1.2E-06			3.74E+00	5.7E-08	2.0E-08					6.2E-03	1.2E-05	
VOC	Cyclohexane	110-82-7																								
VOC	1,2-Dichlorobenzene	95-50-1	D																5.5E-08							
VOC	1,1-Dichloroethane	75-34-3	C																3.0E-07							
VOC	1,1-Dichloroethene	75-35-4	C																2.3E-07							
VOC	cis-1,2-Dichloroethene	156-59-2	D																2.9E-07							
VOC	trans-1,2-Dichloroethene	156-60-5																	2.5E-07							
VOC	Ethyl Benzene	100-41-4	D	1.75E-01	9.8E-10								3.9E-05	7.7E-08			7.57E-01	9.8E-08	6.8E-09					2.9E-03	5.8E-06	
VOC	Methylcyclohexane	108-87-2		2.54E+00	1.4E-08												1.10E+01	1.2E-07	1.2E-07					2.6E-01	5.1E-04	
VOC	Toluene	108-88-3	D	4.23E-01	2.4E-09								1.3E-04	2.5E-07			1.83E+00	1.5E-07	2.5E-08					2.3E-02	4.5E-05	
VOC	Trichloroethene	79-01-6	C-B2			1.1E-02				1.1E-02				1.7E-03					1.1E-07		1.1E-02				1.7E-03	
VOC	Vinyl Chloride	75-01-4	A			1.4E+00				1.4E+00				8.8E-03					5.4E-07		1.4E+00				8.8E-03	
VOC	Xylenes (total)	1330-20-7	ID	2.32E+00	1.3E-08								4.8E-04	9.3E-07			1.00E+01	9.5E-08	8.8E-08					3.3E-02	6.5E-05	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2			1.4E-02		1.0E-01		1.4E-02				4.0E-03					4.3E-10		1.4E-02				4.0E-03	
SVOC	Chrysene	218-01-9	B2			7.3E-03		1.3E-01		7.3E-03				2.1E-03					5.3E-09		7.3E-03				2.1E-03	
SVOC	Phenanthrene	85-01-8	D	1.01E+01	5.7E-08			1.3E-01	2.4E-08				4.7E-05	9.1E-08			4.38E+01	1.9E-08	7.8E-08					1.2E-06	2.3E-09	
				<b>Cumulative Risk:</b>																						

**Construction Scenario Hazard Index Calculations - AOI 13 LNAPL Area**  
**Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Chem Group	Chemical	CASRN	Cancer Class	Smear Zone Soil Ingestion				Smear Zone Soil Dermal Contact				Smear Zone Soil Vapor Inhalation				LNAPL Dermal Contact				LNAPL Vapor Inhalation						
				C <sub>soil</sub> (mg/kg)	ADD (mg/kg/d)	RfD <sub>oral</sub> (mg/kg/d)	HQ	AF <sub>derm</sub>	ADD (mg/kg/d)	RfD <sub>derm</sub> (mg/kg/d)	HQ	C <sub>air</sub> (mg/m <sup>3</sup> )	C <sub>air</sub> (mg/m <sup>3</sup> )	Rfc (mg/m <sup>3</sup> )	HQ	C <sub>NAPL</sub> (mg/L)	DA (L/cm <sup>2</sup> )	ADD (mg/kg/d)	RfD <sub>derm</sub> (mg/kg/d)	HQ	C <sub>air</sub> (mg/m <sup>3</sup> )	C <sub>air</sub> (mg/m <sup>3</sup> )	Rfc (mg/m <sup>3</sup> )	HQ		
VOC	Acetone	67-64-1	D			1.0E-01				1.0E-01				3.5E-01			2.2E-06		1.0E-01				3.5E-01			
VOC	Benzene	71-43-2	A			4.0E-03				4.0E-03				3.0E-02			2.8E-07		4.0E-03				3.0E-02			
VOC	Chloroethane	75-00-3				4.0E-01				4.0E-01				1.0E+01			5.6E-07		4.0E-01				1.0E+01			
VOC	Chloroform	67-66-3	B2			1.0E-02				1.0E-02				5.0E-02			2.3E-07		1.0E-02				5.0E-02			
VOC	Cumene	98-82-8	D	8.66E-01	3.4E-08	1.0E-01	3.4E-07			1.0E-01		6.3E-04	8.6E-06	4.0E-01	2.2E-05	3.74E+00	5.7E-08	1.4E-07	1.0E-01	1.4E-06	6.2E-03	8.5E-05	4.0E-01	2.1E-04		
VOC	Cyclohexane	110-82-7												2.0E+01											2.0E+01	
VOC	1,2-Dichlorobenzene	95-50-1	D			9.0E-02				9.0E-02				2.0E-01			5.5E-08		9.0E-02				2.0E-01			
VOC	1,1-Dichloroethane	75-34-3	C			1.0E-01				1.0E-01				5.0E-01			3.0E-07		1.0E-01				5.0E-01			
VOC	1,1-Dichloroethene	75-35-4	C			5.0E-02				5.0E-02				2.0E-01			2.3E-07		5.0E-02				2.0E-01			
VOC	cis-1,2-Dichloroethene	156-59-2	D			1.0E-02				1.0E-02				3.5E-02			2.9E-07		1.0E-02				3.5E-02			
VOC	trans-1,2-Dichloroethene	156-60-5				2.0E-02				2.0E-02				7.0E-02			2.5E-07		2.0E-02				7.0E-02			
VOC	Ethyl Benzene	100-41-4	D	1.75E-01	6.9E-09	1.0E-01	6.9E-08			1.0E-01		3.9E-05	5.4E-07	1.0E+00	5.4E-07	7.57E-01	9.8E-08	4.8E-08	1.0E-01	4.8E-07	2.9E-03	4.0E-05	1.0E+00	4.0E-05		
VOC	Methylcyclohexane	108-87-2		2.54E+00	9.9E-08									3.0E+00			1.10E+01	1.2E-07	8.5E-07				2.6E-01	3.6E-03	3.0E+00	1.2E-03
VOC	Toluene	108-88-3	D	4.23E-01	1.7E-08	2.0E-01	8.3E-08			2.0E-01		1.3E-04	1.8E-06	4.0E-01	4.4E-06	1.83E+00	1.5E-07	1.8E-07	2.0E-01	8.9E-07	2.3E-02	3.2E-04	4.0E-01	7.9E-04		
VOC	Trichloroethene	79-01-6	C-B2			6.0E-03				6.0E-03				2.1E-02			1.1E-07		6.0E-03				2.1E-02			
VOC	Vinyl Chloride	75-01-4	A			3.0E-03				3.0E-03				1.0E-01			5.4E-07		3.0E-03				1.0E-01			
VOC	Xylenes (total)	1330-20-7	ID	2.32E+00	9.1E-08	2.0E-01	4.5E-07			2.0E-01		4.8E-04	6.5E-06	1.0E-01	6.5E-05	1.00E+01	9.5E-08	6.2E-07	2.0E-01	3.1E-06	3.3E-02	4.6E-04	1.0E-01	4.6E-03		
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2			2.0E-02		1.0E-01		2.0E-02				7.0E-02			4.3E-10		2.0E-02						7.0E-02	
SVOC	Chrysene	218-01-9	B2						1.3E-01								5.3E-09									
SVOC	Phenanthrene	85-01-8	D	1.01E+01	4.0E-07	3.0E-02	1.3E-05	1.3E-01	1.70E-07	3.0E-02	5.7E-06	4.7E-05	6.4E-07	1.1E-01	6.1E-06	4.38E+01	1.9E-08	5.5E-07	3.0E-02	1.8E-05	1.2E-06	1.6E-08	1.1E-01	1.5E-07		
			HI:						1E-05				6E-06				1E-04							2E-05		
																								7E-03		

**Estimated Ambient Air Concentration from Excavation Into Soil with Free-Phase LNAPL at AOI 22 LNAPL Area  
Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

<b>Chem Group</b>	<b>Chemical</b>	<b>CASRN</b>	<b>C<sub>NAPL</sub> (mg/kg)</b>	<b>MW (g/mole)</b>	<b>K<sub>eq</sub> (unitless)</b>	<b>D<sub>air</sub> (cm<sup>2</sup>/s)</b>	<b>Sc</b>	<b>k<sub>G</sub> (m/s)</b>	<b>K (m/s)</b>	<b>J<sub>L</sub> (mg/m<sup>2</sup>-s)</b>	<b>C<sub>air, worker</sub> (mg/m<sup>3</sup>)</b>
VOC	Acetone	67-64-1	6.60E+00	5.8E+01	5.5E-03	1.2E-01	1.1E+00	2.2E-03	1.2E-05	7.2E-02	7.9E-01
VOC	Benzene	71-43-2		7.8E+01	2.3E-03	8.8E-02	1.6E+00	1.7E-03	3.9E-06		
VOC	Chloroethane	75-00-3		6.5E+01	2.4E-02	1.1E-01	1.3E+00	2.0E-03	4.8E-05		
VOC	Chloroform	67-66-3		1.2E+02	4.7E-03	1.0E-01	1.3E+00	1.9E-03	9.1E-06		
VOC	Cumene	98-82-8		1.2E+02	1.1E-04	6.5E-02	2.1E+00	1.4E-03	1.5E-07		
VOC	Cyclohexane	110-82-7		8.4E+01	2.3E-03	1.1E-01	1.3E+00	2.0E-03	4.6E-06		
VOC	1,2-Dichlorobenzene	95-50-1		1.5E+02	3.3E-05	6.9E-02	2.0E+00	1.5E-03	4.8E-08		
VOC	1,1-Dichloroethane	75-34-3		9.9E+01	5.4E-03	7.4E-02	1.9E+00	1.5E-03	8.3E-06		
VOC	1,1-Dichloroethene	75-35-4		9.7E+01	1.4E-02	9.0E-02	1.6E+00	1.7E-03	2.5E-05		
VOC	cis-1,2-Dichloroethene	156-59-2		9.7E+01	4.8E-03	7.4E-02	1.9E+00	1.5E-03	7.4E-06		
VOC	trans-1,2-Dichloroethene	156-60-5		9.7E+01	8.0E-03	7.1E-02	2.0E+00	1.5E-03	1.2E-05		
VOC	Ethyl Benzene	100-41-4		1.1E+02	2.3E-04	7.5E-02	1.9E+00	1.5E-03	3.5E-07		
VOC	Methylcyclohexane	108-87-2		9.8E+01	1.2E-03	9.0E-02	1.6E+00	1.7E-03	2.2E-06		
VOC	Toluene	108-88-3		9.2E+01	6.8E-04	8.7E-02	1.6E+00	1.7E-03	1.2E-06		
VOC	Trichloroethylene	79-01-6	4.90E-01	1.3E+02	1.8E-03	7.9E-02	1.8E+00	1.6E-03	2.8E-06	1.3E-03	1.4E-02
VOC	Vinyl Chloride	75-01-4		6.3E+01	7.1E-02	1.1E-01	1.3E+00	1.9E-03	1.4E-04		
VOC	Xylenes (total)	1330-20-7		1.1E+02	1.9E-04	7.8E-02	1.8E+00	1.6E-03	3.0E-07		
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	1.60E+02	3.9E+02	1.5E-10	3.5E-02	4.0E+00	9.3E-04	1.4E-13	2.1E-08	2.3E-07
SVOC	Chrysene	218-01-9		2.3E+02	1.5E-13	2.5E-02	5.6E+00	7.4E-04	1.1E-16		
SVOC	Phenanthrene	85-01-8		1.8E+02	2.7E-09	3.3E-02	4.2E+00	9.0E-04	2.4E-12		
<b>Notes:</b>											
<i>Physical Properties of Air</i>											
	Pressure		1 atm	assumed							
	Molecular Weight		28.8 g/g mol	Perry and Chilton (1973)							
	Viscosity		1.80E-04 g/(cm.s)	Perry and Chilton (1973)							
	Density		0.00129 g/cm <sup>3</sup>	Perry and Chilton (1973)							
<i>Physical Properties of NAPL</i>											
	Molecular Weight		370 g/g mol								
	Density		0.91 g/cm <sup>3</sup>								
<i>Physical Characteristics of Excavation Pit</i>											
	Windspeed		0.5 m/s	assumed							
	Surface Area		2.1E+01 m <sup>2</sup>								
	Effective Diameter of Area		5.2E+00 m	calculated							

Estimated Concentrations in Ambient Air from Excavations into Smear Zone Soil Containing LNAPL at AOI 22 Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan						
			Vapor		PM <sub>10</sub>	
	C/Q (kg/m <sup>3</sup> per kg/m <sup>2</sup> -s):		1.1E+01		1.1E+01	
Chem Chem	Chemical	CASRN	C <sub>soil</sub> (mg/kg)	C <sub>source</sub> (mg/kg)	C <sub>air</sub> (mg/m <sup>3</sup> )	C <sub>soil</sub> (mg/kg)
VOC	Acetone	67-64-1	1.4E+00	1.4E+00	3.8E-04	1.4E+00
VOC	Benzene	71-43-2				
VOC	Chloroethane	75-00-3				
VOC	Chloroform	67-66-3				
VOC	Cumene	98-82-8				
VOC	Cyclohexane	110-82-7				
VOC	1,2-Dichlorobenzene	95-50-1				
VOC	1,1-Dichloroethane	75-34-3				
VOC	1,1-Dichloroethene	75-35-4				
VOC	cis-1,2-Dichloroethene	156-59-2				
VOC	trans-1,2-Dichloroethene	156-60-5				
VOC	Ethyl Benzene	100-41-4				
VOC	Methylcyclohexane	108-87-2				
VOC	Toluene	108-88-3				
VOC	Trichloroethene	79-01-6	1.0E-01	1.0E-01	3.8E-05	1.0E-01
VOC	Vinyl Chloride	75-01-4				
VOC	Xylenes (total)	1330-20-7				
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	3.3E+01	3.3E+01	4.6E-06	3.3E+01
SVOC	Chrysene	218-01-9				
SVOC	Phenanthrene	85-01-8				
<b>Notes:</b>						
C <sub>SZ soil</sub>	= Smear Zone Soil Concentration					
C <sub>source</sub>	= Minimum of Smear Zone Soil Concentration and C <sub>sat</sub>					
Italicized C <sub>source</sub> values are based on saturated soil concentrations.						

Nonsteady State Dermal Absorption of Chemical from LNAPL at AOI 22 Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan												
Chem Group	Chemical	CASRN	MW (g/mole)	K <sub>ow</sub> (unitless)	K <sub>p</sub> (cm/hr)	B (unitless)	τ (hr)	c	b	ts (hr)	FA (unitless)	DA (L/cm <sup>2</sup> -event)
VOC	Acetone	67-64-1	5.8E+01	5.8E-01	9.0E-04	2.7E-03	2.2E-01	3.4E-01	3.0E-01	5.3E-01	1.0E+00	2.2E-06
VOC	Benzene	71-43-2	7.8E+01	1.3E+02	1.1E-04	3.7E-04	2.9E-01	3.3E-01	3.0E-01	6.9E-01	1.0E+00	2.8E-07
VOC	Chloroethane	75-00-3	6.5E+01	2.7E+01	2.3E-04	7.0E-04	2.4E-01	3.3E-01	3.0E-01	5.8E-01	1.0E+00	5.6E-07
VOC	Chloroform	67-66-3	1.2E+02	8.3E+01	7.6E-05	3.2E-04	4.9E-01	3.3E-01	3.0E-01	1.2E+00	1.0E+00	2.3E-07
VOC	Cumene	98-82-8	1.2E+02	4.6E+03	1.9E-05	8.1E-05	5.0E-01	3.3E-01	3.0E-01	1.2E+00	1.0E+00	5.7E-08
VOC	Cyclohexane	110-82-7	8.4E+01				3.1E-01	3.3E-01	3.0E-01	7.5E-01	1.0E+00	
VOC	1,2-Dichlorobenzene	95-50-1	1.5E+02	2.7E+03	1.6E-05	7.6E-05	7.0E-01	3.3E-01	3.0E-01	1.7E+00	1.0E+00	5.5E-08
VOC	1,1-Dichloroethane	75-34-3	9.9E+01	6.2E+01	1.1E-04	4.2E-04	3.8E-01	3.3E-01	3.0E-01	9.0E-01	1.0E+00	3.0E-07
VOC	1,1-Dichloroethene	75-35-4	9.7E+01	1.3E+02	8.6E-05	3.2E-04	3.7E-01	3.3E-01	3.0E-01	8.8E-01	1.0E+00	2.3E-07
VOC	cis-1,2-Dichloroethene	156-59-2	9.7E+01	7.2E+01	1.1E-04	4.0E-04	3.7E-01	3.3E-01	3.0E-01	8.8E-01	1.0E+00	2.9E-07
VOC	trans-1,2-Dichloroethene	156-60-5	9.7E+01	1.2E+02	9.0E-05	3.4E-04	3.7E-01	3.3E-01	3.0E-01	8.8E-01	1.0E+00	2.5E-07
VOC	Ethyl Benzene	100-41-4	1.1E+02	1.4E+03	3.5E-05	1.4E-04	4.1E-01	3.3E-01	3.0E-01	9.9E-01	1.0E+00	9.8E-08
VOC	Methylcyclohexane	108-87-2	9.8E+01	9.2E+02	4.4E-05	1.7E-04	3.7E-01	3.3E-01	3.0E-01	9.0E-01	1.0E+00	1.2E-07
VOC	Toluene	108-88-3	9.2E+01	5.6E+02	5.6E-05	2.1E-04	3.5E-01	3.3E-01	3.0E-01	8.3E-01	1.0E+00	1.5E-07
VOC	Trichloroethene	79-01-6	1.3E+02	5.1E+02	3.5E-05	1.5E-04	5.7E-01	3.3E-01	3.0E-01	1.4E+00	1.0E+00	1.1E-07
VOC	Vinyl Chloride	75-01-4	6.3E+01	3.2E+01	2.2E-04	6.7E-04	2.4E-01	3.3E-01	3.0E-01	5.7E-01	1.0E+00	5.4E-07
VOC	Xylenes (total)	1330-20-7	1.1E+02	1.5E+03	3.4E-05	1.3E-04	4.1E-01	3.3E-01	3.0E-01	9.9E-01	1.0E+00	9.5E-08
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	3.9E+02	2.0E+07	3.4E-08	2.6E-07	1.6E+01	3.3E-01	3.0E-01	3.9E+01	8.0E-01	4.3E-10
SVOC	Chrysene	218-01-9	2.3E+02	5.0E+05	9.6E-07	5.6E-06	2.0E+00	3.3E-01	3.0E-01	4.8E+00	1.0E+00	5.3E-09
SVOC	Phenanthrene	85-01-8	1.8E+02	2.9E+04	4.8E-06	2.5E-05	1.0E+00	3.3E-01	3.0E-01	2.5E+00	1.0E+00	1.9E-08
<b>Note:</b>	Event Time		hours	t	2.0E+00							

**Construction Scenario Cancer Risk Calculations - AOI 22 LNAPL Area  
Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Construction Scenario Cancer Risk Calculations - AOI 22 LNAPL Area Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan																								
Chem Group	Chemical	CASRN	Cancer Class	Smear Zone Soil Ingestion				Smear Zone Soil Dermal Contact				Smear Zone Soil Vapor Inhalation				LNAPL Dermal Contact								
				C <sub>soil</sub> (mg/kg)	LADD (mg/kg/d)	SF <sub>oral</sub> (mg/kg/d) <sup>-1</sup>	Risk	AF <sub>derm</sub>	LADD (mg/kg/d)	SF <sub>derm</sub> (mg/kg/d) <sup>-1</sup>	Risk	C <sub>air</sub> (mg/m <sup>3</sup> )	C <sub>air</sub> (mg/m <sup>3</sup> )	URF (m <sup>3</sup> /mg)	Risk	C <sub>NAPL</sub> (mg/L)	DA (L/cm <sup>2</sup> )	LADD (mg/kg/d)	SF <sub>derm</sub> (mg/kg/d) <sup>-1</sup>	Risk	C <sub>air</sub> (mg/m <sup>3</sup> )	C <sub>air</sub> (mg/m <sup>3</sup> )	URF (m <sup>3</sup> /mg)	Risk
VOC	Acetone	67-64-1	D	1.39E+00	7.8E-09							3.9E-04	7.6E-07			6.02E+00	2.2E-06	1.2E-06			7.9E-01	1.5E-03		
VOC	Benzene	71-43-2	A			5.5E-02					5.5E-02				7.8E-03			2.8E-07		5.5E-02			7.8E-03	
VOC	Chloroethane	75-00-3																5.6E-07						
VOC	Chloroform	67-66-3	B2												2.3E-02			2.3E-07					2.3E-02	
VOC	Cumene	98-82-8	D														5.7E-08							
VOC	Cyclohexane	110-82-7																						
VOC	1,2-Dichlorobenzene	95-50-1	D														5.5E-08							
VOC	1,1-Dichloroethane	75-34-3	C														3.0E-07							
VOC	1,1-Dichloroethene	75-35-4	C														2.3E-07							
VOC	cis-1,2-Dichloroethene	156-59-2	D														2.9E-07							
VOC	trans-1,2-Dichloroethene	156-60-5															2.5E-07							
VOC	Ethyl Benzene	100-41-4	D														9.8E-08							
VOC	Methylcyclohexane	108-87-2															1.2E-07							
VOC	Toluene	108-88-3	D														1.5E-07							
VOC	Trichloroethene	79-01-6	C-B2	1.04E-01	5.8E-10	1.1E-02	6.4E-12			1.1E-02		3.8E-05	7.5E-08	1.7E-03	1.3E-10	4.47E-01	1.1E-07	4.5E-09	1.1E-02	5.0E-11	1.4E-02	2.7E-05	1.7E-03	4.6E-08
VOC	Vinyl Chloride	75-01-4	A			1.4E+00				1.4E+00				8.8E-03			5.4E-07		1.4E+00				8.8E-03	
VOC	Xylenes (total)	1330-20-7	ID														9.5E-08							
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	3.38E+01	1.9E-07	1.4E-02	2.6E-09	1.0E-01	6.2E-08	1.4E-02	8.7E-10	4.7E-06	9.1E-09	4.0E-03	3.6E-11	1.46E+02	4.3E-10	5.8E-09	1.4E-02	8.1E-11	2.3E-07	4.5E-10	4.0E-03	1.8E-12
SVOC	Chrysene	218-01-9	B2			7.3E-03		1.3E-01		7.3E-03				2.1E-03			5.3E-09		7.3E-03				2.1E-03	
SVOC	Phenanthrene	85-01-8	D						1.3E-01								1.9E-08							
				Cumulative Risk:				3E-09			9E-10			2E-10				1E-10					5E-08	

Construction Scenario Hazard Index Calculations - AOI 22 LNAPL Area Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan																											
Chem Group	Chemical	CASRN	Cancer Class	Smear Zone Soil Ingestion				Smear Zone Soil Dermal Contact				Smear Zone Soil Vapor Inhalation				LNAPL Dermal Contact					LNAPL Vapor Inhalation						
				C <sub>soil</sub> (mg/kg)	ADD (mg/kg/d)	RfD <sub>oral</sub> (mg/kg/d)	HQ	AF <sub>derm</sub>	ADD (mg/kg/d)	RfD <sub>derm</sub> (mg/kg/d)	HQ	C <sub>air</sub> (mg/m <sup>3</sup> )	C <sub>air</sub> (mg/m <sup>3</sup> )	Rfc (mg/m <sup>3</sup> )	HQ	C <sub>NAPL</sub> (mg/L)	DA (L/cm <sup>2</sup> )	ADD (mg/kg/d)	RfD <sub>derm</sub> (mg/kg/d)	HQ	C <sub>air</sub> (mg/m <sup>3</sup> )	C <sub>air</sub> (mg/m <sup>3</sup> )	Rfc (mg/m <sup>3</sup> )	HQ			
VOC	Acetone	67-64-1	D	1.39E+00	5.5E-08	1.0E-01	5.5E-07			1.0E-01		3.9E-04	5.3E-06	3.5E-01	1.5E-05	6.02E+00	2.2E-06	8.6E-06	1.0E-01	8.6E-05	7.9E-01	1.1E-02	3.5E-01	3.1E-02			
VOC	Benzene	71-43-2	A			4.0E-03				4.0E-03				3.0E-02				2.8E-07		4.0E-03				3.0E-02			
VOC	Chloroethane	75-00-3				4.0E-01				4.0E-01				1.0E+01				5.6E-07		4.0E-01				1.0E+01			
VOC	Chloroform	67-66-3	B2			1.0E-02				1.0E-02				5.0E-02				2.3E-07		1.0E-02				5.0E-02			
VOC	Cumene	98-82-8	D			1.0E-01				1.0E-01				4.0E-01				5.7E-08		1.0E-01				4.0E-01			
VOC	Cyclohexane	110-82-7												2.0E+01											2.0E+01		
VOC	1,2-Dichlorobenzene	95-50-1	D			9.0E-02				9.0E-02				2.0E-01				5.5E-08		9.0E-02				2.0E-01			
VOC	1,1-Dichloroethane	75-34-3	C			1.0E-01				1.0E-01				5.0E-01				3.0E-07		1.0E-01				5.0E-01			
VOC	1,1-Dichloroethene	75-35-4	C			5.0E-02				5.0E-02				2.0E-01				2.3E-07		5.0E-02				2.0E-01			
VOC	cis-1,2-Dichloroethene	156-59-2	D			1.0E-02				1.0E-02				3.5E-02				2.9E-07		1.0E-02				3.5E-02			
VOC	trans-1,2-Dichloroethene	156-60-5				2.0E-02				2.0E-02				7.0E-02				2.5E-07		2.0E-02				7.0E-02			
VOC	Ethyl Benzene	100-41-4	D			1.0E-01				1.0E-01				1.0E+00				9.8E-08		1.0E-01				1.0E+00			
VOC	Methylcyclohexane	108-87-2												3.0E+00				1.2E-07						3.0E+00			
VOC	Toluene	108-88-3	D			2.0E-01				2.0E-01				4.0E-01				1.5E-07		2.0E-01				4.0E-01			
VOC	Trichloroethene	79-01-6	C-B2	1.04E-01	4.1E-09	6.0E-03	6.8E-07			6.0E-03			3.8E-05	5.3E-07	2.1E-02	2.5E-05	4.47E-01	1.1E-07	3.2E-08	6.0E-03	5.3E-06	1.4E-02	1.9E-04	2.1E-02	9.0E-03		
VOC	Vinyl Chloride	75-01-4	A			3.0E-03				3.0E-03				1.0E-01				5.4E-07		3.0E-03				1.0E-01			
VOC	Xylenes (total)	1330-20-7	ID			2.0E-01				2.0E-01				1.0E-01				9.5E-08		2.0E-01				1.0E-01			
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	3.38E+01	1.3E-06	2.0E-02	6.6E-05	1.0E-01	4.37E-07	2.0E-02	2.2E-05	4.7E-06	6.4E-08	7.0E-02	9.1E-07	1.46E+02	4.3E-10	4.0E-08	2.0E-02	2.0E-06	2.3E-07	3.1E-09	7.0E-02	4.5E-08			
SVOC	Chrysene	218-01-9	B2						1.3E-01									5.3E-09									
SVOC	Phenanthrene	85-01-8	D			3.0E-02		1.3E-01		3.0E-02					1.1E-01				1.9E-08		3.0E-02				1.1E-01		
			HI:						7E-05					2E-05				4E-05						9E-05			4E-02

**Estimated Ambient Air Concentration from Excavation Into Soil with Free-Phase LNAPL at AOI 50 LNAPL Area  
Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

<b>Chem Group</b>	<b>Chemical</b>	<b>CASRN</b>	<b>C<sub>NAPL</sub> (mg/kg)</b>	<b>MW (g/mole)</b>	<b>K<sub>eq</sub> (unitless)</b>	<b>D<sub>air</sub> (cm<sup>2</sup>/s)</b>	<b>Sc</b>	<b>k<sub>G</sub> (m/s)</b>	<b>K (m/s)</b>	<b>J<sub>L</sub> (mg/m<sup>2</sup>-s)</b>	<b>C<sub>air, worker</sub> (mg/m<sup>3</sup>)</b>
VOC	Acetone	67-64-1		5.8E+01	5.5E-03	1.2E-01	1.1E+00	2.2E-03	1.2E-05		
VOC	Benzene	71-43-2	2.30E-01	7.8E+01	2.3E-03	8.8E-02	1.6E+00	1.7E-03	3.9E-06	8.2E-04	9.0E-03
VOC	Chloroethane	75-00-3	3.20E-01	6.5E+01	2.4E-02	1.1E-01	1.3E+00	2.0E-03	4.8E-05	1.4E-02	1.5E-01
VOC	Chloroform	67-66-3	9.00E-01	1.2E+02	4.7E-03	1.0E-01	1.3E+00	1.9E-03	9.1E-06	7.5E-03	8.2E-02
VOC	Cumene	98-82-8	5.80E-01	1.2E+02	1.1E-04	6.5E-02	2.1E+00	1.4E-03	1.5E-07	8.0E-05	8.8E-04
VOC	Cyclohexane	110-82-7	5.20E-01	8.4E+01	2.3E-03	1.1E-01	1.3E+00	2.0E-03	4.6E-06	2.2E-03	2.4E-02
VOC	1,2-Dichlorobenzene	95-50-1	1.90E-01	1.5E+02	3.3E-05	6.9E-02	2.0E+00	1.5E-03	4.8E-08	8.2E-06	9.0E-05
VOC	1,1-Dichloroethane	75-34-3	7.60E-01	9.9E+01	5.4E-03	7.4E-02	1.9E+00	1.5E-03	8.3E-06	5.8E-03	6.3E-02
VOC	1,1-Dichloroethene	75-35-4	6.00E-01	9.7E+01	1.4E-02	9.0E-02	1.6E+00	1.7E-03	2.5E-05	1.4E-02	1.5E-01
VOC	cis-1,2-Dichloroethene	156-59-2	9.90E+00	9.7E+01	4.8E-03	7.4E-02	1.9E+00	1.5E-03	7.4E-06	6.7E-02	7.3E-01
VOC	trans-1,2-Dichloroethene	156-60-5	8.00E-01	9.7E+01	8.0E-03	7.1E-02	2.0E+00	1.5E-03	1.2E-05	8.6E-03	9.5E-02
VOC	Ethyl Benzene	100-41-4	5.40E-01	1.1E+02	2.3E-04	7.5E-02	1.9E+00	1.5E-03	3.5E-07	1.7E-04	1.9E-03
VOC	Methylcyclohexane	108-87-2	7.30E-01	9.8E+01	1.2E-03	9.0E-02	1.6E+00	1.7E-03	2.2E-06	1.4E-03	1.6E-02
VOC	Toluene	108-88-3	4.80E-01	9.2E+01	6.8E-04	8.7E-02	1.6E+00	1.7E-03	1.2E-06	5.1E-04	5.6E-03
VOC	Trichloroethylene	79-01-6	3.40E+00	1.3E+02	1.8E-03	7.9E-02	1.8E+00	1.6E-03	2.8E-06	8.7E-03	9.6E-02
VOC	Vinyl Chloride	75-01-4	8.30E-02	6.3E+01	7.1E-02	1.1E-01	1.3E+00	1.9E-03	1.4E-04	1.1E-02	1.2E-01
VOC	Xylenes (total)	1330-20-7	2.40E+00	1.1E+02	1.9E-04	7.8E-02	1.8E+00	1.6E-03	3.0E-07	6.6E-04	7.3E-03
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7		3.9E+02	1.5E-10	3.5E-02	4.0E+00	9.3E-04	1.4E-13		
SVOC	Chrysene	218-01-9	7.10E+01	2.3E+02	1.5E-13	2.5E-02	5.6E+00	7.4E-04	1.1E-16	7.1E-12	7.8E-11
SVOC	Phenanthrene	85-01-8	7.90E+01	1.8E+02	2.7E-09	3.3E-02	4.2E+00	9.0E-04	2.4E-12	1.7E-07	1.9E-06
<b>Notes:</b>											
<i>Physical Properties of Air</i>											
Pressure		1 atm		assumed							
Molecular Weight		28.8 g/g mol		Perry and Chilton (1973)							
Viscosity		1.80E-04 g/(cm.s)		Perry and Chilton (1973)							
Density		0.00129 g/cm <sup>3</sup>		Perry and Chilton (1973)							
<i>Physical Properties of NAPL</i>											
Molecular Weight		370 g/g mol									
Density		0.91 g/cm <sup>3</sup>									
<i>Physical Characteristics of Excavation Pit</i>											
Windspeed		0.5 m/s		assumed							
Surface Area		2.1E+01 m <sup>2</sup>									
Effective Diameter of Area		5.2E+00 m		calculated							

Estimated Concentrations in Ambient Air from Excavations into Smear Zone Soil Containing LNAPL at AOI 50 Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan							
				Vapor	PM <sub>10</sub>		
		C/Q (kg/m <sup>3</sup> per kg/m <sup>2</sup> -s):		1.1E+01	1.1E+01		
Chem Chem	Chemical	CASRN	C <sub>soil</sub> (mg/kg)	C <sub>source</sub> (mg/kg)	C <sub>air</sub> (mg/m <sup>3</sup> )	C <sub>soil</sub> (mg/kg)	C <sub>air</sub> (mg/m <sup>3</sup> )
VOC	Acetone	67-64-1					
VOC	Benzene	71-43-2	2.3E-02	2.3E-02	1.0E-05	2.3E-02	1.3E-01
VOC	Chloroethane	75-00-3	3.2E-02	3.2E-02	2.9E-05	3.2E-02	1.8E-01
VOC	Chloroform	67-66-3	8.9E-02	8.9E-02	4.2E-05	8.9E-02	5.2E-01
VOC	Cumene	98-82-8	5.7E-02	5.7E-02	4.2E-05	5.7E-02	3.3E-01
VOC	Cyclohexane	110-82-7	5.1E-02	5.1E-02	9.3E-05	5.1E-02	3.0E-01
VOC	1,2-Dichlorobenzene	95-50-1	1.9E-02	1.9E-02	1.6E-06	1.9E-02	1.1E-01
VOC	1,1-Dichloroethane	75-34-3	7.5E-02	7.5E-02	3.9E-05	7.5E-02	4.4E-01
VOC	1,1-Dichloroethene	75-35-4	5.9E-02	5.9E-02	5.1E-05	5.9E-02	3.4E-01
VOC	cis-1,2-Dichloroethene	156-59-2	9.8E-01	9.8E-01	4.2E-04	9.8E-01	5.7E+00
VOC	trans-1,2-Dichloroethene	156-60-5	7.9E-02	7.9E-02	4.2E-05	7.9E-02	4.6E-01
VOC	Ethyl Benzene	100-41-4	5.3E-02	5.3E-02	1.2E-05	5.3E-02	3.1E-01
VOC	Methylcyclohexane	108-87-2	7.2E-02			7.2E-02	4.2E-01
VOC	Toluene	108-88-3	4.7E-02	4.7E-02	1.4E-05	4.7E-02	2.8E-01
VOC	Trichloroethene	79-01-6	3.4E-01	3.4E-01	1.2E-04	3.4E-01	2.0E+00
VOC	Vinyl Chloride	75-01-4	8.2E-03	8.2E-03	1.0E-05	8.2E-03	4.8E-02
VOC	Xylenes (total)	1330-20-7	2.4E-01	2.4E-01	4.9E-05	2.4E-01	1.4E+00
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7					
SVOC	Chrysene	218-01-9	7.0E+00	3.8E+00	3.2E-06	7.0E+00	4.1E+01
SVOC	Phenanthrene	85-01-8	7.8E+00	7.8E+00	3.6E-05	7.8E+00	4.5E+01
<b>Notes:</b>							
C <sub>SZ soil</sub> = Smear Zone Soil Concentration							
C <sub>source</sub> = Minimum of Smear Zone Soil Concentration and C <sub>sat</sub>							
Italicized C <sub>source</sub> values are based on saturated soil concentrations.							

Nonsteady State Dermal Absorption of Chemical from LNAPL at AOI 50 Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan												
Chem Group	Chemical	CASRN	MW (g/mole)	K <sub>ow</sub> (unitless)	K <sub>p</sub> (cm/hr)	B (unitless)	τ (hr)	c	b	ts (hr)	FA (unitless)	DA (L/cm <sup>2</sup> -event)
VOC	Acetone	67-64-1	5.8E+01	5.8E-01	9.0E-04	2.7E-03	2.2E-01	3.4E-01	3.0E-01	5.3E-01	1.0E+00	2.2E-06
VOC	Benzene	71-43-2	7.8E+01	1.3E+02	1.1E-04	3.7E-04	2.9E-01	3.3E-01	3.0E-01	6.9E-01	1.0E+00	2.8E-07
VOC	Chloroethane	75-00-3	6.5E+01	2.7E+01	2.3E-04	7.0E-04	2.4E-01	3.3E-01	3.0E-01	5.8E-01	1.0E+00	5.6E-07
VOC	Chloroform	67-66-3	1.2E+02	8.3E+01	7.6E-05	3.2E-04	4.9E-01	3.3E-01	3.0E-01	1.2E+00	1.0E+00	2.3E-07
VOC	Cumene	98-82-8	1.2E+02	4.6E+03	1.9E-05	8.1E-05	5.0E-01	3.3E-01	3.0E-01	1.2E+00	1.0E+00	5.7E-08
VOC	Cyclohexane	110-82-7	8.4E+01				3.1E-01	3.3E-01	3.0E-01	7.5E-01	1.0E+00	
VOC	1,2-Dichlorobenzene	95-50-1	1.5E+02	2.7E+03	1.6E-05	7.6E-05	7.0E-01	3.3E-01	3.0E-01	1.7E+00	1.0E+00	5.5E-08
VOC	1,1-Dichloroethane	75-34-3	9.9E+01	6.2E+01	1.1E-04	4.2E-04	3.8E-01	3.3E-01	3.0E-01	9.0E-01	1.0E+00	3.0E-07
VOC	1,1-Dichloroethene	75-35-4	9.7E+01	1.3E+02	8.6E-05	3.2E-04	3.7E-01	3.3E-01	3.0E-01	8.8E-01	1.0E+00	2.3E-07
VOC	cis-1,2-Dichloroethene	156-59-2	9.7E+01	7.2E+01	1.1E-04	4.0E-04	3.7E-01	3.3E-01	3.0E-01	8.8E-01	1.0E+00	2.9E-07
VOC	trans-1,2-Dichloroethene	156-60-5	9.7E+01	1.2E+02	9.0E-05	3.4E-04	3.7E-01	3.3E-01	3.0E-01	8.8E-01	1.0E+00	2.5E-07
VOC	Ethyl Benzene	100-41-4	1.1E+02	1.4E+03	3.5E-05	1.4E-04	4.1E-01	3.3E-01	3.0E-01	9.9E-01	1.0E+00	9.8E-08
VOC	Methylcyclohexane	108-87-2	9.8E+01	9.2E+02	4.4E-05	1.7E-04	3.7E-01	3.3E-01	3.0E-01	9.0E-01	1.0E+00	1.2E-07
VOC	Toluene	108-88-3	9.2E+01	5.6E+02	5.6E-05	2.1E-04	3.5E-01	3.3E-01	3.0E-01	8.3E-01	1.0E+00	1.5E-07
VOC	Trichloroethene	79-01-6	1.3E+02	5.1E+02	3.5E-05	1.5E-04	5.7E-01	3.3E-01	3.0E-01	1.4E+00	1.0E+00	1.1E-07
VOC	Vinyl Chloride	75-01-4	6.3E+01	3.2E+01	2.2E-04	6.7E-04	2.4E-01	3.3E-01	3.0E-01	5.7E-01	1.0E+00	5.4E-07
VOC	Xylenes (total)	1330-20-7	1.1E+02	1.5E+03	3.4E-05	1.3E-04	4.1E-01	3.3E-01	3.0E-01	9.9E-01	1.0E+00	9.5E-08
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	3.9E+02	2.0E+07	3.4E-08	2.6E-07	1.6E+01	3.3E-01	3.0E-01	3.9E+01	8.0E-01	4.3E-10
SVOC	Chrysene	218-01-9	2.3E+02	5.0E+05	9.6E-07	5.6E-06	2.0E+00	3.3E-01	3.0E-01	4.8E+00	1.0E+00	5.3E-09
SVOC	Phenanthrene	85-01-8	1.8E+02	2.9E+04	4.8E-06	2.5E-05	1.0E+00	3.3E-01	3.0E-01	2.5E+00	1.0E+00	1.9E-08
<b>Note:</b>	Event Time		hours	t	2.0E+00							

## **Construction Scenario Cancer Risk Calculations - AOI 50 LNAPL Area Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan**

Construction Scenario Hazard Index Calculations - AOI 50 LNAPL Area  
Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan

		Construction Scenario Hazard Index Calculations - AOI 50 LNAPL Area Delphi Energy and Chassis Systems Dort Highway Facility, Flint, Michigan																							
Chem Group	Chemical	CASRN	Cancer Class	Smear Zone Soil Ingestion				Smear Zone Soil Dermal Contact				Smear Zone Soil Vapor Inhalation				LNAPL Dermal Contact					LNAPL Vapor Inhalation				
				C <sub>soil</sub> (mg/kg)	ADD (mg/kg/d)	RfD <sub>oral</sub> (mg/kg/d)	HQ	AF <sub>derm</sub>	ADD (mg/kg/d)	RfD <sub>derm</sub> (mg/kg/d)	HQ	C <sub>air</sub> (mg/m <sup>3</sup> )	C <sub>air</sub> (mg/m <sup>3</sup> )	RfC (mg/m <sup>3</sup> )	HQ	C <sub>NAPL</sub> (mg/L)	DA (L/cm <sup>2</sup> )	ADD (mg/kg/d)	RfD <sub>derm</sub> (mg/kg/d)	HQ	C <sub>air</sub> (mg/m <sup>3</sup> )	C <sub>air</sub> (mg/m <sup>3</sup> )	RfC (mg/m <sup>3</sup> )	HQ	
VOC	Acetone	67-64-1	D				1.0E-01				1.0E-01						2.2E-06		1.0E-01				3.5E-01		
VOC	Benzene	71-43-2	A	2.30E-02	9.0E-10	4.0E-03	2.3E-07			4.0E-03		1.0E-05	1.4E-07	3.0E-02	4.8E-06	2.10E-01	2.8E-07	3.8E-08	4.0E-03	9.5E-06	9.0E-03	1.2E-04	3.0E-02	4.1E-03	
VOC	Chloroethane	75-00-3		3.21E-02	1.3E-09	4.0E-01	3.1E-09			4.0E-01		2.9E-05	4.0E-07	1.0E+01	4.0E-08	2.92E-01	5.6E-07	1.1E-07	4.0E-01	2.6E-07	1.5E-01	2.1E-03	1.0E+01	2.1E-04	
VOC	Chloroform	67-66-3	B2	9.02E-02	3.5E-09	1.0E-02	3.5E-07			1.0E-02		4.2E-05	5.8E-07	5.0E-02	1.2E-05	8.21E-01	2.3E-07	1.2E-07	1.0E-02	1.2E-05	8.2E-02	1.1E-03	5.0E-02	2.2E-02	
VOC	Cumene	98-82-8	D	5.81E-02	2.3E-09	1.0E-01	2.3E-08			1.0E-01		4.2E-05	5.8E-07	4.0E-01	1.5E-06	5.29E-01	5.7E-08	2.0E-08	1.0E-01	2.0E-07	8.8E-04	1.2E-05	4.0E-01	3.0E-05	
VOC	Cyclohexane	110-82-7		5.21E-02	2.0E-09							9.4E-05	1.3E-06	2.0E+01	6.5E-08	4.75E-01					2.4E-02	3.3E-04	2.0E+01	1.7E-05	
VOC	1,2-Dichlorobenzene	95-50-1	D	1.90E-02	7.5E-10	9.0E-02	8.3E-09			9.0E-02		1.6E-06	2.2E-08	2.0E-01	1.1E-07	1.73E-01	5.5E-08	6.2E-09	9.0E-02	6.9E-08	9.0E-05	1.2E-06	2.0E-01	6.2E-06	
VOC	1,1-Dichloroethane	75-34-3	C	7.61E-02	3.0E-09	1.0E-01	3.0E-08			1.0E-01		3.9E-05	5.4E-07	5.0E-01	1.1E-06	6.94E-01	3.0E-07	1.3E-07	1.0E-01	1.3E-06	6.3E-02	8.7E-04	5.0E-01	1.7E-03	
VOC	1,1-Dichloroethene	75-35-4	C	6.01E-02	2.4E-09	5.0E-02	4.7E-08			5.0E-02		5.2E-05	7.1E-07	2.0E-01	3.6E-06	5.48E-01	2.3E-07	8.3E-08	5.0E-02	1.7E-06	1.5E-01	2.1E-03	2.0E-01	1.0E-02	
VOC	cis-1,2-Dichloroethene	156-59-2	D	9.92E-01	3.9E-08	1.0E-02	3.9E-06			1.0E-02		4.3E-04	5.9E-06	3.5E-02	1.7E-04	9.03E+00	2.9E-07	1.7E-06	1.0E-02	1.7E-04	7.3E-01	1.0E-02	3.5E-02	2.9E-01	
VOC	trans-1,2-Dichloroethene	156-60-5		8.02E-02	3.1E-09	2.0E-02	1.6E-07			2.0E-02		4.3E-05	5.8E-07	7.0E-02	8.3E-06	7.30E-01	2.5E-07	1.2E-07	2.0E-02	5.8E-06	9.5E-02	1.3E-03	7.0E-02	1.9E-02	
VOC	Ethyl Benzene	100-41-4	D	5.41E-02	2.1E-09	1.0E-01	2.1E-08			1.0E-01		1.2E-05	1.7E-07	1.0E+00	1.7E-07	4.93E-01	9.8E-08	3.1E-08	1.0E-01	3.1E-07	1.9E-03	2.6E-05	1.0E+00	2.6E-05	
VOC	Methylcyclohexane	108-87-2		7.31E-02	2.9E-09								3.0E+00			6.66E-01	1.2E-07	5.2E-08			1.6E-02	2.2E-04	3.0E+00	7.2E-05	
VOC	Toluene	108-88-3	D	4.81E-02	1.9E-09	2.0E-01	9.4E-09			2.0E-01		1.5E-05	2.0E-07	4.0E-01	5.0E-07	4.38E-01	1.5E-07	4.3E-08	2.0E-01	2.1E-07	5.6E-03	7.6E-05	4.0E-01	1.9E-04	
VOC	Trichloroethene	79-01-6	C-B2	3.41E-01	1.3E-08	6.0E-03	2.2E-06			6.0E-03		1.3E-04	1.7E-06	2.1E-02	8.2E-05	3.10E+00	1.1E-07	2.2E-07	6.0E-03	3.7E-05	9.6E-02	1.3E-03	2.1E-02	6.2E-02	
VOC	Vinyl Chloride	75-01-4	A	8.32E-03	3.3E-10	3.0E-03	1.1E-07			3.0E-03		1.0E-05	1.4E-07	1.0E-01	1.4E-06	7.57E-02	5.4E-07	2.6E-08	3.0E-03	8.8E-06	1.2E-01	1.6E-03	1.0E-01	1.6E-02	
VOC	Xylenes (total)	1330-20-7	ID	2.40E-01	9.4E-09	2.0E-01	4.7E-08			2.0E-01		4.9E-05	6.8E-07	1.0E-01	6.8E-06	2.19E+00	9.5E-08	1.3E-07	2.0E-01	6.7E-07	7.3E-03	1.0E-04	1.0E-01	1.0E-03	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2			2.0E-02		1.0E-01		2.0E-02				7.0E-02			4.3E-10		2.0E-02				7.0E-02		
SVOC	Chrysene	218-01-9	B2	7.11E+00	2.8E-07			1.3E-01	1.19E-07			3.2E-06	4.4E-08			6.48E+01	5.3E-09	2.2E-07			7.8E-11	1.1E-12			
SVOC	Phenanthrene	85-01-8	D	7.92E+00	3.1E-07	3.0E-02	1.0E-05	1.3E-01	1.33E-07	3.0E-02	4.4E-06	3.6E-05	5.0E-07	1.1E-01	4.7E-06	7.21E+01	1.9E-08	9.0E-07	3.0E-02	3.0E-05	1.9E-06	2.6E-08	1.1E-01	2.5E-07	
				HI:			2E-05				4E-06				3E-04					3E-04			4E-01		